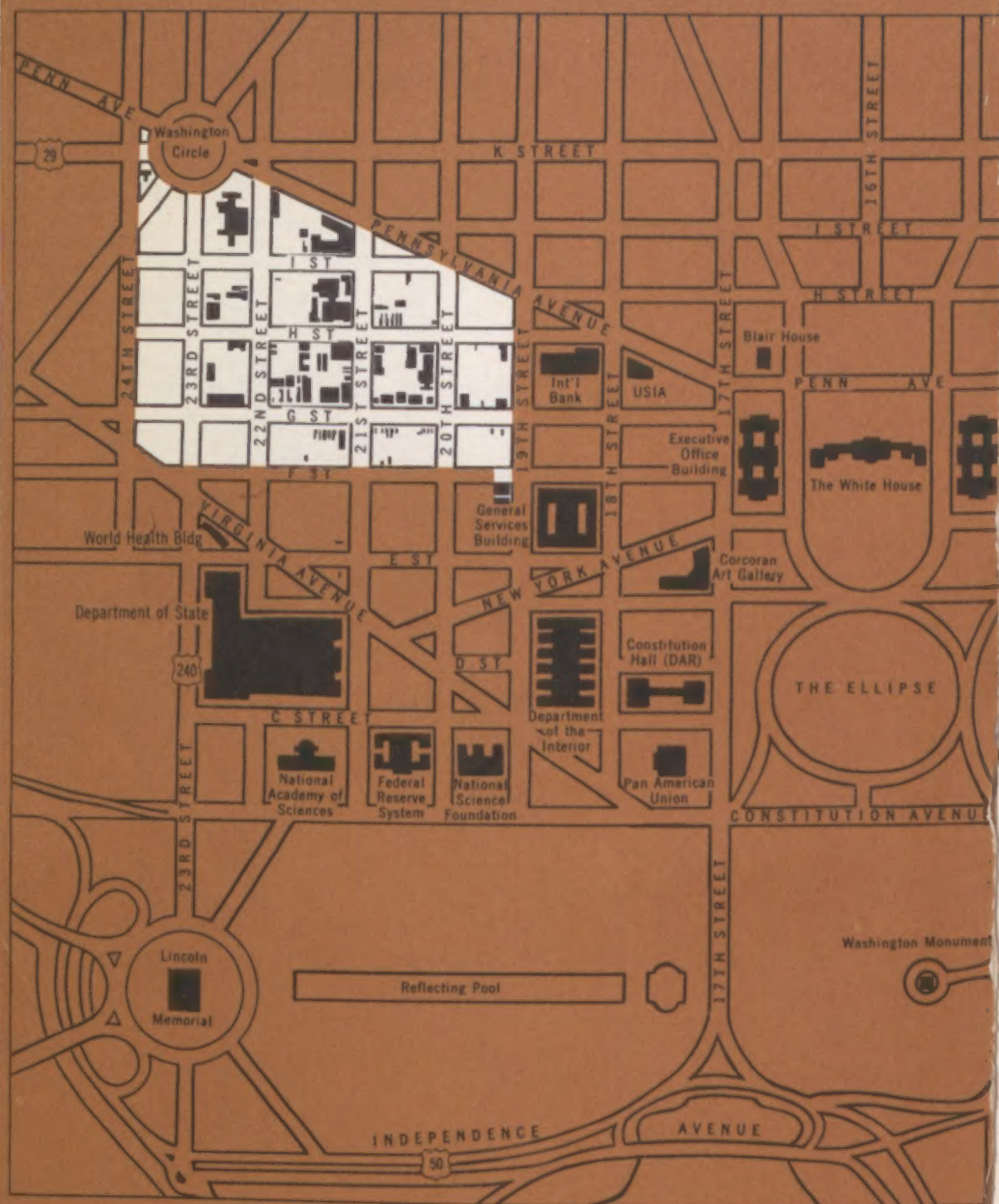


THE GEORGE WASHINGTON UNIVERSITY BULLETIN



UNDERGRADUATE
AND
GRADUATE
CATALOGUE

7
1969-1970



THE GEORGE WASHINGTON UNIVERSITY CAMPUS / WASHINGTON, D.C.

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THE GEORGE WASHINGTON UNIVERSITY BULLETIN

UNDERGRADUATE AND GRADUATE CATALOGUE 1969-70

Arts and Sciences, Education,
Government and Business Administration,
Public and International Affairs

This catalogue lists the programs and faculties of Columbian College of Arts and Sciences, the Graduate School of Arts and Sciences, the School of Education, the School of Government and Business Administration, and the School of Public and International Affairs.

It also contains information on the Division of University Students, in which students may register for University courses for credit or as auditors without pursuing degree programs.

For information concerning the University's programs and faculties in Engineering and Applied Science, Law, and Medicine, request the appropriate catalogue.

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FACTS ABOUT GEORGE WASHINGTON UNIVERSITY

| | |
|--|---|
| <i>General Information</i> | Private, Nonsectarian, Coeducational, Founded 1821 |
| <i>Location</i> | Washington, D. C., bounded by Pennsylvania Avenue and 19th, F, and 24th Streets, N.W. |
| <i>Number of Students</i> | 13,813 (8,858 men, 4,955 women) |
| <i>Number of Undergraduates</i> | 5,454 (2,686 men, 2,768 women) |
| <i>Geographical Origin of Students</i> | 50 states, District of Columbia, 80 countries; 20% are from the Washington area |
| <i>1969-70 Tuition</i> | Undergraduate: \$1,800 for two semesters; graduate: \$64 for each semester hour (see pages 28-29) |
| <i>Number of Full-time Faculty</i> | 696 (72% with Doctoral degrees) |
| <i>Number of Part-time Faculty</i> | 354 (includes some of the most distinguished men in Washington who serve as professorial lecturers) |
| <i>Residence Hall Space</i> | 2,212 (an additional 1,500 students reside in fraternity houses, rooms, and apartments on or near the campus) |
| <i>Room and Board</i> | Cost varies from \$1,120 to \$1,270 for the academic year (see page 56) |
| <i>Campus Organizations</i> | 145 |

Undergraduate majors: Accounting, American Civilization, Anthropology, Applied Statistics, Art History and Theory, Biology, Botany, Business Administration, Business and Economic Statistics, Chemistry, Chinese Studies, Civil Engineering, Classical Archeology and Greek, Dramatic Art, Economics, Electrical Engineering, Elementary Education, Fine Arts, French Language and Literature, Geography, Geology, Germanic Languages and Literatures, History, International Affairs, International Business, Journalism, Latin, Latin American Studies, Literature (English, American), Mathematical Statistics, Mathematics, Measurement Science, Mechanical Engineering, Medical Technology, Music (Applied History and Literature, Theory), Philosophy, Physical Education, Physics, Political Science, Premedicine, Psychology, Public Affairs, Religion, Russian Language and Literature, Secondary Education, Sociology, Spanish American Literature, Spanish Language and Literature, Speech, Speech Pathology and Audiology, Zoology.

Study leading to graduate or professional degrees is offered in the Graduate School of Arts and Sciences, the National Law Center, the School of Medicine, the School of Engineering and Applied Science, the School of Education, the School of Government and Business Administration, and the School of Public and International Affairs.

UNIVERSITIES are undergoing change, either drastically or slowly, as they have been for centuries. Whatever the changes, the one premise on which universities are based remains constant: universities are for learning—for acquiring learning, for transmitting learning, and for the exploration that yields new learning. Any other objective is unworthy of a university, and any other purpose is incompatible with the student and his relationship to the institution.

The faculty, through scholarship and research, extends learning, and it transmits learning by teaching. The student learns from the faculty, the library, and the laboratory—if he accepts, as he must accept, learning as his objective. This learning does not take place in a vacuum; in addition to the particular content of learning, the student will develop certain habits of mind—analytical thinking, powers of insight, self-examination, and the use of rational discourse—that will serve him throughout his personal and professional life.

Within this basic context, George Washington University invites the student to take up his residence in order that his energies, interests, and talents may be directed to learning.

Exceptional opportunities for learning are made possible because of the University's location in the heart of the Nation's Capital. For example, cooperative programs are conducted in various fields of study with members of Congress, the Smithsonian Institution, the Library of Congress, the National Gallery of Art, and other Federal and private organizations. In addition to these programs, Washington presents opportunities for observation, study, service, and recreation limited only by the student's time, energy, and imagination.

In this atmosphere, George Washington University seeks to provide a matrix for learning not available in the standard university education, so that no graduate can ever forget that as a student he was at the center of things and that he must forever carry additional responsibility in and for society, because of the opportunity that was his.

LLOYD H. ELLIOTT
President
The George Washington University



THE UNIVERSITY CALENDAR CONTENTS

Page

| | |
|-----|---|
| 7 | The University Calendar |
| 11 | The University |
| 11 | History |
| 12 | Purpose and Objectives |
| 13 | The Colleges, Schools, and Divisions |
| 14 | Academic Status |
| 14 | Location |
| 15 | Government |
| 15 | The University Libraries |
| 16 | The Board of Trustees of the University |
| 17 | Standing Committees of the Board of Trustees |
| 18 | Officers of Administration |
| 20 | Committees of the University |
| 21 | The University Senate |
| 23 | General Information |
| 23 | Admission |
| 27 | Registration |
| 28 | Fees and Financial Regulations |
| 33 | Financial Aid |
| 39 | Prizes |
| 43 | Regulations |
| 50 | Cooperative Programs |
| 52 | The Speech and Hearing Clinic |
| 52 | The Reading Center |
| 53 | Veterans Education |
| 53 | University Computer Center |
| 54 | General Alumni Association |
| 55 | Student Life |
| 55 | Student Services |
| 59 | Student Activities |
| 65 | Columbian College of Arts and Sciences |
| 87 | Graduate School of Arts and Sciences |
| 99 | School of Education |
| 125 | School of Government and Business Administration |
| 153 | School of Public and International Affairs |
| 167 | Division of University Students |
| 171 | The Summer Sessions |
| 172 | Program of Policy Studies in Science and Technology |
| 174 | Sponsored Research |
| 179 | Courses of Instruction |
| 180 | Accounting |
| 183 | American Studies Program |
| 187 | Anatomy |
| 189 | Anthropology |
| 194 | Art |
| 203 | Biochemistry |

Page

| | |
|-----|---|
| 205 | Biological Sciences |
| 212 | Biophysics—Graduate Study |
| 215 | Business Administration |
| 230 | Chemistry |
| 236 | Chinese Language and Literature |
| 238 | Classics |
| 241 | Economics |
| 248 | Education |
| 261 | English |
| 268 | Epidemiology and Environmental Health |
| 269 | Geography and Regional Science |
| 273 | Geology |
| 278 | Germanic Languages and Literatures |
| 282 | Health Care Administration |
| 284 | History |
| 293 | Honors Program—Columbian College Lower Division |
| 294 | Institute for Sino-Soviet Studies |
| 299 | Journalism |
| 301 | Latin American Studies |
| 303 | Linguistics—Graduate Study |
| 305 | Mathematics |
| 311 | Microbiology |
| 313 | Music |
| 319 | Pathology |
| 321 | Pharmacology |
| 323 | Philosophy |
| 325 | Physical Education |
| 332 | Physics |
| 337 | Physiology |
| 340 | Political Science |
| 351 | Psychology |
| 358 | Public Administration |
| 362 | Public and International Affairs |
| 364 | Religion |
| 367 | Romance Languages and Literatures |
| 377 | Slavic Languages and Literatures |
| 381 | Sociology |
| 387 | Special Education |
| 391 | Speech and Drama |
| 397 | Statistics |
| 404 | Urban and Regional Planning |
| 407 | Faculty and Staff of Instruction |
| 407 | Emeriti |
| 409 | Active |
| 445 | Consultants in Research—Graduate School of Arts and Sciences |
| 451 | Field of Studies Consultants—Graduate School of Arts and Sciences |
| 452 | Appendix: Recently Established Regulations |
| 454 | Correspondence Directory |
| 455 | Index |
| 468 | Colleges and Schools—Degree Programs |

THE UNIVERSITY CALENDAR 1969-70

1969

SEPTEMBER

S M T W T F S

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7 8 9 10 11 12 13

14 15 16 17 18 19 20

21 22 23 24 25 26 27

28 29 30

OCTOBER

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NOVEMBER

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30

DECEMBER

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1970

JANUARY

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FEBRUARY

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MARCH

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MAY

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JUNE

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JULY

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26 27 28 29 30 31

AUGUST

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16 17 18 19 20 21 22

23 24 25 26 27 28 29

30 31

1969-70 FALL SEMESTER

- September 12 Orientation for students from foreign countries *Friday*
- September 16 Placement tests and advising for transfer students *Tuesday*
- September 16-17 Advising *Tuesday-Wednesday*
- September 17 Placement tests and advising for entering freshmen who did not attend Summer Advance Registration sessions *Wednesday*
- September 17 University Faculty Assembly Meeting *Wednesday*
- *September 18-20 Registration *Thursday-Saturday*
Application for February graduation due as part of registration
- September 23 Classes begin *Tuesday*
- October 11 Application for November Ed.D. Comprehensive Examinations due *Saturday*
- October 16 Board of Trustees Meeting *Thursday*
- October 17 Columbian College of Arts and Sciences Faculty Meeting *Friday*
- November 8 National Teacher Examinations *Saturday*
- November 11 Veterans Day (holiday) *Tuesday*

* Registration is conducted alphabetically according to the first letter of the student's surname. The alphabetical breakdown and the hours of registration will be stated in the *Schedule of Classes*, which is available well in advance of each semester.

| | |
|-----------------------|---|
| <i>November 15</i> | Ed.D. Comprehensive Examinations <i>Saturday</i> |
| <i>November 15</i> | Application for December Ed.D., Ed.S., and M.A. in Ed. Comprehensive Examinations due <i>Saturday</i> |
| <i>November 26</i> | Thanksgiving recess begins after last class <i>Wednesday</i> |
| <i>December 1</i> | Classes resume <i>Monday</i> |
| <i>December 5-6</i> | School of Government and Business Administration Master's Comprehensive Examinations <i>Friday-Saturday</i> |
| <i>December 8</i> | D.B.A., D.P.A., and Ph.D. Dissertations of February candidates due <i>Monday</i> |
| <i>December 12-13</i> | International Affairs and Public Affairs Master's Comprehensive Examinations <i>Friday-Saturday</i> |
| <i>December 20</i> | Ed.D., Ed.S., and M.A. in Ed. Comprehensive Examinations <i>Saturday</i> |
| <i>*December 20</i> | Last day of fall-semester classes <i>Saturday</i> |
| <i>December 20</i> | Christmas recess begins after last class <i>Saturday</i> |
| <i>January 5</i> | Master's Theses and Ed.D. Dissertations of February candidates due <i>Monday</i> |
| <i>January 5-9</i> | Fall-semester reading period <i>Monday-Friday</i> |
| <i>January 7</i> | Columbian College of Arts and Sciences Faculty Meeting <i>Wednesday</i> |
| <i>January 10-22</i> | Examination period <i>Saturday-Thursday</i> |
| <i>January 15</i> | Board of Trustees Meeting <i>Thursday</i> |

1970 SPRING SEMESTER

| | |
|-----------------------|---|
| <i>January 26</i> | Placement tests <i>Monday</i> |
| <i>January 26-28</i> | Advising for freshmen, sophomores, and all new students <i>Monday-Wednesday</i> |
| <i>†January 29-31</i> | Registration <i>Thursday-Saturday</i> |
| | Application for June graduation due as a part of registration |
| <i>February 2</i> | Spring-semester classes begin <i>Monday</i> |
| <i>February 10</i> | University Faculty Assembly Meeting <i>Tuesday</i> |
| <i>February 21</i> | Winter Convocation <i>Saturday</i> |
| <i>February 23</i> | Holiday <i>Monday</i> |
| <i>March 6</i> | Columbian College of Arts and Sciences Faculty Meeting <i>Friday</i> |
| <i>March 19</i> | Board of Trustees Meeting <i>Thursday</i> |
| <i>March 21</i> | Spring recess begins after last class <i>Saturday</i> |
| <i>March 31</i> | Classes resume <i>Tuesday</i> |
| <i>March 31</i> | D.B.A., D.P.A., and Ph.D. Dissertations of June Candidates due <i>Tuesday</i> |
| <i>April 1</i> | Application for April Ed.D., Ed.S., and M.A. in Ed. Comprehensive Examinations due <i>Wednesday</i> |
| <i>April 11</i> | National Teacher Examinations <i>Saturday</i> |

* In certain courses, classes may be continued through the fall-semester reading period, January 5-9.
 † Registration is conducted alphabetically according to the first letter of the student's surname. The alphabetical breakdown and the hours of registration will be stated in the *Schedule of Classes*, which is available well in advance of each semester.

- April 17-18* School of Government and Business Administration Master's Comprehensive Examinations *Friday-Saturday*
- April 20* Ed.D. Dissertations of June candidates due *Monday*
- April 24-25* International Affairs and Public Affairs Master's Comprehensive Examinations *Friday-Saturday*
- April 25* Ed.D., Ed.S., and M.A. in Ed. Comprehensive Examinations *Saturday*
- May 4* Master's Theses of June candidates due *Monday*
- *May 9* Last day of spring-semester classes *Saturday*
- May 11-15* Spring-semester reading period *Monday-Friday*
- May 13* Columbian College of Arts and Sciences Faculty Meeting *Wednesday*
- May 16-28* Examination period *Saturday-Thursday*
- May 21* Board of Trustees Annual Meeting *Thursday*
- May 30* Memorial Day (holiday) *Saturday*
- June 7* Commencement *Sunday*

1978 SUMMER SESSIONS

- June 15* Registration for first 5-week session and first 3-week Education workshop *Monday*
- June 16* First 5-week session and first 3-week Education workshop classes begin *Tuesday*
- July 2* First 3-week Education workshop ends *Thursday*
- July 3* Holiday *Friday*
- July 6* Registration and beginning of classes for second 3-week Education workshop and six-week Education session *Monday*
- July 22* First 5-week session ends *Wednesday*
- July 23* Registration for second 5-week session *Thursday*
- July 24* Second 5-week session classes begin *Friday*
- July 24* Second 3-week Education workshop ends *Friday*
- July 27* Registration and beginning of classes for third 3-week Education workshop *Monday*
- August 14* Third 3-week Education workshop and six-week Education session ends *Friday*
- August 28* Second 5-week session ends *Friday*

1970-71 FALL SEMESTER

- September 17-19* Registration *Thursday-Saturday*

* In certain courses, classes may be continued through the spring-semester reading period, May 11-15.



THE UNIVERSITY

HISTORY

THE GEORGE WASHINGTON UNIVERSITY had its beginning in 1821 as The Columbian College in the District of Columbia. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University. The debt of the University to George Washington, whose name it bears, is an intangible one.

George Washington, as President and as private citizen, had urgently insisted upon the establishment of a National University in the Federal City. There he hoped that, while being instructed in the arts and sciences, students from all parts of the country would acquire the habits of good citizenship, throwing off local prejudices and gaining at first hand a knowledge of the practice, as well as the theory, of republican government. To further the materialization of his hopes, Washington left a bequest of fifty shares of The Potomac Company, "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." The Congress never extended "a fostering hand." The Potomac Company passed out of existence, and Washington's bequest became worthless.

Fully conscious of Washington's hopes, but motivated primarily by a great missionary urge and the need for a learned clergy, a group of dedicated ministers and laymen sponsored a movement for the establishment of a college in the District of Columbia. Inspired largely by the zeal and energy of the Reverend Luther Rice, they raised funds for the purchase of a site and petitioned Congress for a charter. After much delay and amendment, Congress granted a charter which was approved by President Monroe on February 9, 1821. To safeguard the College's nonsectarian character it provided "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages thereof, for or on account of his sentiments in matters of religion."

During the entire time when the institution was known as Columbian College, its activities were centered on College Hill, a tract of forty-six and a half acres between the present Fourteenth and Fifteenth Streets extending north from Florida Avenue to somewhat beyond Columbia Road. The Medical School was located downtown. For the better part of the Columbian Univer-

sity period, the buildings of the University were situated along H Street between Thirteenth and Fifteenth Streets. The Medical School group still remains there.

During the last half century the University's present plant has been developed in that section of the old First Ward familiarly known as "Foggy Bottom," between Nineteenth and Twenty-fourth Streets, south of Pennsylvania Avenue. The area is not without its reminders of historic interest to the University. President Monroe, who signed the Charter, lived at 2017 Eye Street. The first President of the Board of Trustees, the Reverend Obadiah B. Brown, was for fifty years the pastor of a church at Nineteenth and Eye Streets, and Washington selected Twenty-third and E Streets as the site of the National University he hoped to see established.

PURPOSE AND OBJECTIVES

The purpose of The George Washington University was to realize "the aspirations of Washington, Jefferson, and Madison, for the erection of a university at the seat of the Federal Government." Over the years it has been the aim to develop the University ideal in the Nation's Capital with a view toward meeting the changing needs of society while continuing to pursue the traditional principles of learning and research.

The George Washington University now rededicates itself and all the resources at its command to the pursuit of knowledge and its dissemination.

To this end:

The University recognizes its special opportunities in and obligations to one of the principal capitals of the world. It is a primary objective of the University to utilize its historical, geographical, and functional relationship to the Nation's Capital and the Washington community in continuing the development of a great nationally and internationally oriented university.

The University recognizes the needs of our times and accepts the challenge to develop each student's potential abilities to the fullest extent.

The University is and should remain privately controlled, nonsectarian, and co-educational.

Admission to the University is determined only in terms of the personal character and academic qualifications of the candidates.

A broadly based liberal education is fundamental to the total program of the University.

Expansion of graduate and professional studies and research and the utilization for this purpose of the excellent research facilities and materials available in the Nation's Capital are basic to the continuous development of the University's educational program.

The provision of superior instruction and facilities and the application of high standards of entrance qualifications and academic achievement to all students whether full-time or part-time, on-campus or off-campus, are major missions of the University.

A balanced program of student extracurricular activities is an integral part of the University program.

The University will continue to strive to meet the evident needs of an enlarged student body while governing the size of enrollment by its capacity to supply adequate staff and facilities for the excellent teaching and research which it espouses.

THE COLLEGES, SCHOOLS, AND DIVISIONS

George Washington University includes eleven colleges, schools, and divisions, as follows:

Columbian College of Arts and Sciences,* through its lower and upper divisions, offers four-year programs in the arts and sciences leading to the degrees of Bachelor of Arts, Bachelor of Science, and (in cooperation with the Department of Pathology and the University Hospital) Bachelor of Science in Medical Technology. The lower division also provides the first two years of the prelegal and premedical programs; the preprofessional work required for admission to the School of Education, the School of Government and Business Administration, and the School of Public and International Affairs; and a terminal Associate in Arts curriculum in Accounting. Columbian College has academic jurisdiction over the off-campus programs leading to the degrees of Bachelor of General Studies, Bachelor of Science in Environmental Health, Bachelor of Science in Geodetic and Cartographic Science, and Bachelor of Science in Oceanography. These off-campus programs are administered by the College of General Studies.

*The Graduate School of Arts and Sciences** offers advanced study and research leading to the degrees of Master of Arts, Master of Fine Arts, Master of Music, Master of Science, and Doctor of Philosophy.

*The School of Medicine** offers work leading to the degree of Doctor of Medicine.

The National Law Center offers courses leading to the degrees of Juris Doctor, Master of Laws, Master of Comparative Law, Master of Comparative Law (American Practice), and Doctor of Juridical Science; and special programs in Continuing Legal Education.

The School of Engineering and Applied Science offers courses leading to the degree of Bachelor of Science in the following areas: Civil Engineering, Electrical Engineering, Measurement Science, and Mechanical Engineering. Graduate programs lead to the degrees of Master of Science, Master of Engineering Administration, and Doctor of Science.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education and Bachelor of Science in Physical Education; graduate studies leading to the degrees of Master of Arts in Education, Master of Arts in Teaching, Education Specialist, and Doctor of Education.

The School of Government and Business Administration offers undergraduate programs leading to the degree of Bachelor of Business Administration and graduate programs leading to the degrees of Master of Arts in Government, Master of Arts in Health Care Administration, Master of Business Administration, Master of Public Administration, Master of Urban and Regional Planning; the Graduate Certificate in Health Care Administration; the degrees of Doctor of Business Administration and Doctor of Public Administration. The School also has academic jurisdiction over off-campus programs leading to the following degrees: Bachelor of Science in General Studies, Master of Science in Administration, and Master of Science in Business Administration. These off-campus programs are administered by the College of General Studies.

* Columbian College of Arts and Sciences and the Graduate School of Arts and Sciences cooperate with the School of Medicine in offering the combined degrees of (1) Bachelor of Arts and Doctor of Medicine and (2) Master of Science and Doctor of Medicine.

The School of Public and International Affairs offers undergraduate programs leading to the degree of Bachelor of Arts and graduate programs leading to the Certificate of the Institute for Sino-Soviet Studies and the degree of Master of Arts. The School has academic jurisdiction over the off-campus program leading to the degree of Master of Science in International Affairs, which is administered by the College of General Studies.

The College of General Studies supplements the adult education program of the University through campus and off-campus study; conferences, seminars, and special projects; and continuing education and noncredit programs. This College also administers the off-campus programs over which Columbian College of Arts and Sciences, the School of Government and Business Administration, and the School of Public and International Affairs have academic jurisdiction.

The Division of University Students makes available courses for students not candidates for degrees in this University.

The Summer Sessions.

ACADEMIC STATUS

George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The National Law Center is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association. The School of Medicine is a member of the Association of American Medical Colleges and is one of the medical colleges which have been continuously approved by the American Medical Association. Curricula of the School of Engineering and Applied Science in Civil, Electrical, and Mechanical Engineering are accredited by the Engineers' Council for Professional Development. The School of Education is a charter member of the American Association of Colleges for Teacher Education and is accredited by the National Council for Accreditation of Teacher Education. The School of Government and Business Administration has maintained full membership in the Middle Atlantic Association of Colleges of Business Administration since 1961. It joined the Council on Graduate Education for Public Administration in 1966. By invitation, the School became a charter academic member of the American Association of Collegiate Schools of Business Assembly in 1968. The programs in Public Accounting designed to prepare students for Certified Public Accountants examinations have been approved by the state boards of New York and of Maryland. The program in Hospital Administration has been accredited by the Association of University Programs in Hospital Administration since 1962. The Department of Chemistry is on the approved list of the American Chemical Society.

LOCATION

The University is in downtown Washington four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible are many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the

Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor, as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Geographic Society, the World Bank, the Brookings Institution, the National Gallery of Art, and the Corcoran Gallery of Art.

GOVERNMENT

The University is privately endowed and is governed by a self-perpetuating Board of Trustees of which the President of the University is an ex officio member. The members of the Board are named for a period of three years and are divided into three classes. The members of one class are elected at each annual meeting to fill the places of the members whose terms of office expire. Two members of each class are nominated by the Alumni Association.

THE UNIVERSITY LIBRARIES

The Library collections of the University are housed in the University Library, the general library of the University, and in the departmental libraries of law and medicine.

These collections contain 476,902 volumes—333,305 in the University Library, 104,436 in the Law Library, and 39,161 in the Medical Library. Approximately 30,000 volumes a year are added to the Library's resources. Endowments, supplementing the University appropriation, provide books in the fields of American civilization, American literature, foreign service, history, public finance, and the social sciences; and gifts from many sources have enriched the collections. The Libraries currently receive 3,606 periodicals.

Information concerning the use of the Libraries may be obtained at the Library service desks.

The Library is administered for the curricular, reference, and recreational needs and interests of the students. Instruction in the use of the library is given upon request by the reference librarians. The Library endeavors to assist students and all members of the University to use the rich library resources of Washington and the unusual opportunities they offer for extensive research. Interlibrary loan arrangements are maintained with other libraries in the city and in the United States.

The student has access to the Library of Congress, the Public Library of the District of Columbia and its branches, the libraries of the Pan American Union, the Bureau of Railway Economics, the U.S. Department of Agriculture, the Smithsonian Institution, the National Library of Medicine, and many of the other great special collections of the government departments. Doctoral students at George Washington University may, upon application to the Dean of the Graduate School of Arts and Sciences, be issued a Consortium library card which permits direct borrowing from the libraries of the other Consortium institutions.

The hours of the University Library are Monday through Friday, 8:30 a.m. to 12:00 midnight; Saturday, 9:00 a.m. to 6:00 p.m.; Sunday, 1:00 p.m. to 12:00 midnight. The Law Library is open Monday through Friday, 8:00 a.m. to 12:00 midnight; Saturday, 9:00 a.m. to 5:00 p.m.; and Sunday, 2:00 to 10:00 p.m. The Medical Library is open Monday through Friday, 8:30 a.m. to 10:00 p.m.; Saturday, 8:30 a.m. to 5:00 p.m.; Sunday, 12:00 to 5:00 p.m.

THE BOARD OF TRUSTEES OF THE UNIVERSITY

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 John W. Thompson, Jr., B.A., *Assistant Secretary*

TERM ENDING 1969

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 Sidney Dillon Ripley II, Ph.D., L.H.D., Sc.D.
 Charles E. Smith
 Lewis L. Strauss, Sc.D., LL.D., L.H.D.
 *James Otis Wright, B.S., J.D.

TERM ENDING 1970

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 Robert Calhoun Baker, LL.D.
 George A. Butler, LL.B.
 *Donald C. Cook, B.A., M.B.A., J.D., LL.M., L.H.D., LL.D.
 Brooks Hays, B.A., J.D., LL.D., L.H.D., D.C.L., D.D., HH.D.
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 David Matthew Kennedy, LL.B., B.A., LL.D.
 Franklin Jerome Lunding, LL.B., LL.D.
 Edward Karrick Morris, LL.D.
 Godfrey Leon Munter, B.A., LL.B., LL.D.
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 John W. Thompson, Jr., B.A.
 Watson W. Wise, Ph.B.

TERM ENDING 1971

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 Eugene Cassin Carusi, M.A., J.D.
 Miss Jacqueline Cochran, L.H.D., LL.D., Sc.D.
 Harry F. Duncan
 Mrs. Katharine Graham, B.A.
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* Nominated by the alumni.

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The Committee on Academic Policy, whose Chairman is the Vice President for Academic Affairs, is composed of the following members: the deans of the colleges, schools, and divisions; the Chairman of the Executive Committee of the University Senate; the Vice President and Treasurer; the Vice President for Resources; the Vice President for Advanced Policy Studies; the Vice President for Student Affairs; the Assistant Vice President for Academic Affairs; the Assistant Vice President and Assistant Treasurer; the Assistant Treasurer and Director, Office of Student Financial Aid; the Registrar; the Director of Admissions; the Director of the Budget; the Comptroller; the Director of Public Relations; the Associate Deans of Students; the Administrator of the Office of Sponsored Research; the Business Manager; the Director of Personnel Services; the Administrator of the University Hospital and Clinics; the Director of Libraries; the Director of the University Center; the Director of Men's Athletics; the President of the Student Assembly; and a student representative of Phi Beta Kappa.

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| | |
|----------------------------|--------------------------------|
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| Galip Mehmet Arkilic | *Calvin Darlington Linton |
| John Gordon Boswell | Thomas Phillip George Liverman |
| Edward Howard Braun | *Louis Harkey Mayo |
| John Withrow Brewer | †Harry Robert Page |
| *Harold Frederick Bright | *John Parks |
| *Arthur Edward Burns | Robert Carleton Parlett |
| Thomas Akroyd Clingan, Jr. | Theodore Peter Perros |
| *Charles William Cole | Max Pock |
| Robert Emmet Cronin | Carol Ruth St. Cyr |
| Alton Harold Desmond | Richard Harold Schlagel |
| *Lloyd Hartman Elliott | David James Sharpe |
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| Lyndale Harpster George | Edwin Lockwood Stevens |
| *Warren Gould | Karl Ernest Stromsem |
| †Peter Proal Hill | *Rodney Tillman |
| *Frederick Russell Houser | §Reuben Esselstyn Wood |
| Robert Gean Jones | Artley Joseph Zuchelli |
| Norman Clifford Kramer | |

* Ex officio member.

† Sabbatical leave fall semester, John Andrew Morgan pro tempore.

‡ Sabbatical leave spring semester, John Raymond Rizzo pro tempore.

§ Chairman of the Executive Committee.



GENERAL INFORMATION

Admission

THE UNIVERSITY ACCEPTS BOTH MEN AND WOMEN. Students are admitted at the beginning of each semester and summer session.

The right is reserved to refuse admission to any student with an academic record which creates doubt of his ability to succeed in college or who, for any other reason, would not be an acceptable student.

An application for admission to degree candidacy should be accompanied by a \$25 application fee.* The application fee is waived for a student applying for readmission who was registered as a degree candidate at the time of his last registration at this University and has not since registered at another institution.

Applicants are urged to submit the application form and complete credentials well in advance of the semester for which they seek admission.

Records presented become the property of the University and cannot be returned.

UNDERGRADUATE ADMISSION†

Forms for application for admission or readmission are available at and should be returned to the Office of Admissions, George Washington University, Washington, D.C. 20006.

SECONDARY SCHOOL STUDENTS

Regular Admission.—Applicants for regular admission who wish to begin college in the fall semester *should* apply during the fall term of the senior high school year, *and* no later than March 1. Students graduating at mid-term wishing to begin college in the spring semester *must* apply no later than December 1. Applications and all required credentials of students wishing to begin college in either the first or second term of the summer session *must* be received prior to March 1.

An applicant from a secondary school must arrange to have sent directly from his school to the Office of Admissions a complete academic record together with a personal evaluation and recommendation from his principal. This

* Application fee must be by check or postal money order, payable to The George Washington University.

† For detailed admission requirements, see the appropriate college or school in this Catalogue. Tests required for admission and Educational Testing Service information are described on page 70. See pages 26-27 for admission requirements for students from foreign institutions.

information may be supplied on a form provided by the University or on a standard form used by the secondary school, provided all essential information is included.

Early Decision Plan.—For the qualified student who wants to begin college in the fall semester and receive an early notice of acceptance, the University offers an early decision plan. The student need *only* indicate on the application form that he wishes an early decision and have all required credentials in the Office of Admissions prior to November 1. A decision will be mailed by December 15. The declaration of intent to attend the University and a \$200 tuition deposit (plus an additional \$200 housing deposit for resident students), non-refundable, *must be submitted by January 15 to reserve space.*

If the applicant is accepted under the early decision plan but fails to submit the deposit by January 15, he will be reconsidered, along with all other applicants, for regular admission, as described above.

TRANSFER STUDENTS

Undergraduate transfer students from other institutions *must* submit application and required credentials prior to June 1 for the fall semester, December 1 for the spring semester, May 1 for the first summer session, and June 1 for the second summer session.

The transfer student must be in good standing as to scholarship and conduct. He must be eligible to return to the last previously attended institution in the semester for which he seeks admission to this University.

An applicant who has attended one or more institutions of higher learning must request *each* registrar to mail directly to the Office of Admissions a transcript of his record, *even though credits were not earned.*

If high school units are not shown on the college transcript, the applicant should request his high school to submit a transcript to the Office of Admissions.

If an applicant has fewer than 60 semester hours of acceptable work (C or better on academic work from an accredited institution), he must request that his high school record and College Entrance Examination Board test scores be sent to the Office of Admissions.

TUITION DEPOSIT

Upon notification of acceptance, a \$100 tuition deposit (\$200 for students admitted by "Early Decision Plan," see above) will be required of all full-time undergraduate students including those readmitted. The deposit is credited toward tuition and is not refundable.

ADVANCED STANDING

CREDIT FOR ADVANCED PLACEMENT EXAMINATIONS

Up to 30 semester hours of credit may be granted for college-level courses in an approved secondary school, if substantiated by satisfactory performance in the appropriate Advanced Placement Examination of the College Entrance Examination Board. Arrangement for the examination is the responsibility of the applicant and should be made with the College Board Advanced Placement Examinations, Box 977, Princeton, N.J. 08540.

Credit is assigned for examinations with scores of 4 or 5 on the basis of a score report from the Educational Testing Service. This report must be requested by the student. Examinations with grades of 3 will be given consideration for possible placement and or credit if the student arranges to have the examination paper sent to the Office of Admissions at the University.

CREDIT FROM HIGHER INSTITUTIONS

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be granted for transferred work only when it meets the requirements for the degree sought at this University. It may be allowed provisionally. Work of low pass grade (*D* or the equivalent) will not be considered for transfer.

SERVICE SCHOOL CREDIT

A limited amount of credit earned in service schools since 1941 may be considered for assignment to qualified degree candidates. Veterans should submit to the Office of Admissions photostatic copies of their service school records, indicating courses successfully completed with sufficient identification of the course to locate it in the *Guide to Evaluation of Educational Experience in the Armed Forces*.

GRADUATE ADMISSION*

Graduate School of Arts and Sciences.—Forms for application for admission or readmission are available at the Office of the Dean of the Graduate School of Arts and Sciences, George Washington University, Washington, D.C. 20006. When completed, these application forms should be submitted to this Office, together with college transcripts and letters of reference, no later than June 1 for the fall semester, December 1 for the spring semester, May 1 for the first summer session, and June 1 for the second summer session.

School of Education.—Forms for application for admission or readmission are available at the Office of the Dean of the School of Education, George Washington University, Washington, D.C. 20006. When completed, these application forms should be submitted to this Office no later than July 1 for the fall semester, December 1 for the spring semester, May 1 for the first summer session, and June 1 for the second summer session.

School of Government and Business Administration.—Forms for application for admission or readmission are available at the Office of the Admissions Officer, School of Government and Business Administration, Chapin Hall, George Washington University, Washington, D.C. 20006. When completed, these application forms should be submitted to this Office no later than July 1 for the fall semester, December 1 for the spring semester, May 1 for the first summer session, and June 1 for the second summer session.

School of Public and International Affairs.—Forms for application for admission or readmission are available at the Office of the Dean of the School of Public and International Affairs, Building T, George Washington University, Wash-

*For detailed admission requirements, see the appropriate college or school in this Catalogue. See pages 26-27 for admission requirements for students from foreign institutions.

ington, D.C. 20006. When completed, these application forms should be submitted to this Office no later than June 1 for the fall semester, December 1 for the spring semester, May 1 for the first summer session, and June 1 for the second summer session.

DIVISION OF UNIVERSITY STUDENTS ADMISSION*

Forms for application for admission to *nondegree* status in the Division of University Students are available at and should be returned to the Office of Admissions, George Washington University, Washington, D.C. 20006. When completed, these application forms, with credentials when required, should be received by the Office of Admissions no later than the Friday before the first day of registration (see Calendar, pages 7-9). No application fee is charged for admission to this Division. For detailed entrance requirements, see page 168.

Registration in a given course may be denied students in this Division when space is needed for degree candidates.

READMISSION

A student previously registered in the University who was not registered on campus during the immediately preceding semester (summer session excluded), must apply for readmission. Final dates for applying are the same as those for "Undergraduate Admission" (see pages 23-25), or "Graduate Admission" (see pages 25-26). If he applies as a degree candidate and was previously registered as a nondegree student, or if he has attended one or more higher institutions during his absence from the University, he must have complete, official transcripts sent to the appropriate office at this University from each institution attended. Applications for readmission are considered on the basis of regulations currently effective.

The application fee is waived for a student applying for readmission who was registered as a degree candidate at the time of his last registration at this University and has not since registered at another institution.

STUDENTS FROM FOREIGN INSTITUTIONS†

Application, required records, and scores on the *Test of English as a Foreign Language* (see page 27) must be received from *foreign applicants* no later than March 1 for the fall semester and November 1 for the spring semester.

REQUIRED RECORDS

Applicants must request all educational institutions attended to send *directly* to the appropriate office (see "Undergraduate Admission," pages 23-25, or "Graduate Admission," pages 25-26) official credentials listing subjects studied, grades

* See this page for admissions requirements for students from foreign institutions.

† For detailed admission requirements, see the appropriate college or school in this Catalogue. Tests required for admission and Educational Testing Service information are described on pages 70 and 170.

received, examinations taken, and degrees received. Certified copies of diplomas and certificates from secondary schools and all colleges and universities attended are required. Records of state examinations and certificates are also needed. All records become the property of the University and *cannot* be returned.

LANGUAGE TEST

Students whose native tongue is not English are required to take the *Test of English as a Foreign Language*. Students are responsible for making arrangements for taking the test and should address inquiries to: TOEFL, Educational Testing Service, Princeton, New Jersey 08540, U.S.A. The completed application form should be returned to the Testing Service at Princeton well in advance of the beginning of the semester for which the applicant seeks admission. The test fee, which should be remitted with the application, entitles the student to have his test score sent to three different institutions. Registration for the *Test of English as a Foreign Language* does *not* constitute application for admission to George Washington University.

The Bulletin of Information, obtainable without charge, contains a description of the test as well as rules regarding application, fees, reports, and the conduct of the test; lists of examination centers; examination dates; and an application blank. On the application for the test, the student should specify that the scores be sent to the appropriate office at this University (see "Undergraduate Admission," pages 23-25, or "Graduate Admission," pages 25-26).

If additional tests are prescribed, necessary instructions will be sent to the applicant.

TRANSFER WITHIN THE UNIVERSITY

For information concerning transfer from one college, school, or division to another within the University, see page 46.

Registration

THE DATES, HOURS, AND PLACE OF REGISTRATION will be stated in the *Schedule of Classes*, which is available well in advance of each semester.

A student cannot register for classes until he has received a letter of admission to the University issued by the appropriate admitting office.

No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in this University and another institution without the prior permission of the dean of the college, school, or division in which he is registered in this University. Registration in more than one college, school, or division of the University requires the written permission of the deans concerned, *prior to registration*. Allowance of credit for work done concurrently at another institution is at the discretion of the appropriate committee.

ELIGIBILITY FOR REGISTRATION*

Registration for the following categories of campus students is held on the days of registration stated in the University Calendar. No student who is suspended or whose record is not clear for any reason is eligible to register.

New Student.—Upon receipt of a letter of admission, the new student is eligible for registration on the stated days of registration.

Readmitted Student.—A student previously registered in the University who was not registered for campus courses during the preceding semester or summer session must apply for and receive a letter of readmission from the appropriate admitting office before he is eligible for registration. A student registered for the spring semester of 1969 need not apply for readmission for the fall semester 1969-70. Such a student is a "Continuing Student."

Continuing Student.—The student registered for campus courses in the immediately preceding semester of the academic year is eligible to register upon presentation of his student identification card from the previous semester. The student registered for the 1969 Summer Sessions campus courses, and not restricted to summer registration, is eligible to register for the 1969-70 fall semester on presentation of his 1969 Summer Sessions student identification card.

REGISTRATION CHANGES AND WITHDRAWALS (see pages 30, 32-33, 45-46)

REGISTRATION BY GW STUDENTS FOR CONSORTIUM COURSES

Students interested in taking courses at any of the four other universities in the Consortium of Universities of the Washington Metropolitan Area, Inc. (see pages 50-51), should consult the program announcements of the other universities. In order to participate in the Consortium program, the graduate student must obtain the approval of his adviser; the undergraduate student must obtain the approval of his dean.

Registration forms and instructions are available from the Registrar. Specific inquiries should be addressed to the Registrar.

Fees and Financial Regulations

FEES PAID BY STUDENTS cover only a portion of the cost of the operation of the University. Income from endowment funds, grants, and gifts from alumni and friends of the institution make up the difference.

The following fees and financial regulations were adopted for the academic year 1969-70. (See page 31 for projected tuition increases for 1970-73.)

Tuition Fees

For undergraduate study in Columbian College of Arts and Sciences, the School of Education, the School of Government and Business Administration, the School of Public and International Affairs; for study in the Divi-

* Registration in a given course may be denied students in the Division of University Students when space is needed for degree candidates.

sion of University Students; and for courses taken on campus by undergraduate students in the College of General Studies:

| | |
|---|----------|
| Full-time program (12 to 18 hours), each semester..... | \$900.00 |
| Part-time program or hours in excess of 18, for each semester hour..... | 64.00 |

For graduate study* in the Graduate School of Arts and Sciences, the School of Education, the School of Government and Business Administration, and the School of Public and International Affairs; and for courses taken on campus by graduate students in the College of General Studies (Exception: doctoral students registered prior to July 1, 1967, who wish to continue payments according to the plan (see below) in effect prior to that date):

| | |
|---|-------|
| For each semester hour for which a student registers..... | 64.00 |
|---|-------|

For students registered for doctoral degrees† in the Graduate Council (now the Graduate School of Arts and Sciences) and the School of Government and Business Administration prior to July 1, 1967, who wish to continue payments according to the plan in effect prior to that date:

| | |
|--|----------|
| For work leading to and including the general examination..... | 1,800.00 |
| For work leading to and including the final examination..... | 1,800.00 |

For students registered for the Doctor of Education degree‡ prior to July 1, 1967, who wish to continue payments according to the plan in effect prior to that date:

| | |
|--|----------|
| For work leading to and including the major field examination..... | 2,250.00 |
| For work leading to and including the final examination..... | 1,350.00 |

University Center Fee (charged all students registered on campus,§ nonrefundable)

For students registered for 11 or more semester hours on campus:

| | |
|---------------------|-------|
| Each semester | 37.50 |
|---------------------|-------|

For students registered for less than 11 semester hours in a semester on campus:

| | |
|---|------|
| For each semester hour for which the student registers..... | 3.50 |
|---|------|

For students maintaining "continuous registration" status:

| | |
|---------------------|------|
| Each semester | 3.50 |
|---------------------|------|

* Payment of tuition for a Master's thesis entitles the candidate, during the period of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, additional time may be granted in accordance with the regulations of the school in which the student is registered.

† The tuition fee is to be paid at the rate of \$450.00 a semester or in full at the beginning of each stage of the doctoral discipline. No "continuous registration" fee will be charged if a third year is needed for completion of either part of the degree requirements. If still more time is needed, the student must maintain continuous registration and pay the continuous registration fee.

‡ As long as there is an unpaid balance for the part of the program on which the student is working, he must make at least the minimum tuition payment of \$225.00 at each fall and spring registration (and for any summer session in which he registers for academic work).

§ If the total fee is paid for the part of the program on which the student is working, he may continue to register, without additional fee, for courses approved by his Master in Research, until the expiration of the time allowed for that part of his program.

§ Students in the College of General Studies are charged the University Center Fee only when registered for courses on campus.

Additional Course Fees

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in two payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

Graduation Fees

| | |
|---|---------|
| Associate in Arts..... | \$10.00 |
| Bachelor's, Master's, Education Specialist, Doctor's degrees..... | 25.00 |
| Certificate of the Institute for Sino-Soviet Studies, Graduate Certificate in Health Care Administration..... | 25.00 |
| Fee for Binding Master's Thesis..... | 10.00 |
| Fee for Microfilm Service and Printing Abstract of Doctoral Dissertation..... | 55.00 |

Residence Hall Fees (see page 56)**Special Fees**

| | |
|---|------------|
| Application fee (degree candidate), nonrefundable..... | 25.00 |
| Tuition deposit, nonrefundable: | |
| Charged each entering or readmitted full-time undergraduate student, except early decision freshmen..... | 100.00 |
| Charged each freshman admitted by the early decision plan..... | 200.00 |
| Application for room reservation, nonrefundable: | |
| Charged each resident student except early decision freshmen..... | 100.00 |
| Charged each student admitted by the early decision plan..... | 200.00 |
| Admission tests (when required)..... | 6.00-12.00 |
| National Teacher Examinations fee, for Bachelor of Arts in Education degree candidates..... | 9.00-13.00 |
| Late-registration fee, for failure to register within the designated period.... | 15.00 |
| Withdrawal fee, charged in special cases..... | 5.00 |
| Service fee, for deferred payment plan (see "Payment of Fees," pages 31-32) | 5.00 |
| Reinstatement fee, for reinstatement after financial suspension for nonpayment of fees..... | 15.00 |
| Returned check fee, charged a student whose check is returned because of insufficient funds or improper drafting..... | 15.00 |
| Continuous Registration fee, to maintain "continuous registration" status during any semester of absence from the University or after completion of tuition requirements*—due and payable on the official days of registration..... | 64.00 |
| For special physical examination..... | 2.00 |
| For each examination to qualify for advanced standing and for each special examination..... | 5.00 |
| English test for foreign students (when required)..... | 5.00 |

* Payment of the continuous registration fee entitles the student who is granted leave of absence to return and continue his work toward a degree under the academic requirements which were in force at the time of his first registration. The continuous registration fee applies toward neither tuition fee nor residence requirements for the degree.

This fee does not apply to students granted military leave, see page 47.

| | |
|--|--------|
| Laboratory checkout fee, for failure to check out of Chemistry laboratory by the date deadline set for the instructor* | \$3.00 |
| Transcript fee, for each transcript of record | 1.00 |

Registration for on-campus courses in the University entitles each student to the following University privileges: (1) the services of the Student Career Services Office; (2) the use of the University Library; (3) gymnasium privileges; (4) admission to all athletic contests, unless otherwise specified; (5) subscription to the *University Hatchet*, the student newspaper; (6) admission to University debates; (7) medical attention and hospital services as described under Health Services; (8) University Center privileges. These privileges terminate when the student withdraws or is dismissed from the University.

PROJECTED TUITION INCREASES 1970-73

In order that students and their parents may plan more realistically for a total four-year period, tuition increases for the academic years 1970-71, 1971-72, and 1972-73 have been estimated as follows:

Increase by year (full-time undergraduate students):

| | |
|---------------|----------|
| 1970-71 | \$100.00 |
| 1971-72 | 100.00 |
| 1972-73 | 100.00 |

Increase by semester hour (graduate and part-time undergraduate students):

| | |
|---------------|------|
| 1970-71 | 4.00 |
| 1971-72 | 4.00 |
| 1972-73 | 4.00 |

It is not possible to project future economic data with certainty. Barring a severe change in the national economy, however, the above listed tuition schedule will be followed.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier. Checks and postal money orders should be made out to George Washington University. No student is permitted to complete registration or attend classes until all fees are paid.

Tuition and fees for each semester are due and payable in full at the time of each registration.

The Student Accounts Office has responsibility for creating, billing, and maintaining student accounts resulting from tuition and room and board charges. A student registered for six semester hours or more may sign a contract with this Office at the time of each registration permitting him to pay one-half of the total tuition and fees (except for fees payable in advance) at the time of registration and the remaining half on or before November 5, 1969 (for the fall semester) and March 18, 1970 (for the spring semester). A service fee of \$5 will be charged for the use of this deferred payment plan. The University will not obligate itself to notify the student, in advance, of the payment-due date for the second half of the semester charges. Students who fail to make

* A student who drops a chemistry course before the end of the semester must check out of the laboratory at the next regular laboratory period.

any payment when due will be automatically suspended and may not attend classes until they have paid all accrued fees and the \$15 reinstatement fee and have been officially reinstated by the Student Accounts Office.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Student Accounts Office.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

Because many parents may wish some option in meeting and financing all or part of the cost of a college education, the University offers educational loan plans through the Girard Trust Exchange Bank in Philadelphia, Pennsylvania; Funds for Education, Inc., Manchester, New Hampshire; and The Riggs National Bank, Washington, D.C.

Although similar in purpose, these plans vary somewhat in coverage and conditions. One-year and multiple-year plans are available. Insurance covering the life and health of the sponsor is provided through these plans.

Individuals over twenty-one years of age who are employed full-time are also eligible to apply. They may sponsor their own contracts, provided they meet the conditions specified by the plan for which they are applying.

Brochures and applications describing these plans are available in the Office of Student Financial Aid.

WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the dean of the college, school, or division in which the student is registered. Notification to an instructor is not an acceptable notice (see "Withdrawal," page 45).

In authorized withdrawals and changes in schedule, cancellations of semester tuition charges and fees will be made in accordance with the following schedule:

1. *Complete withdrawal from the University:*

FALL SEMESTER

| | |
|--|-------------|
| Withdrawal dated on or before September 26, 1969..... | 90 per cent |
| Withdrawal dated September 29 to October 10, 1969..... | 75 per cent |
| Withdrawal dated October 13 to October 24, 1969..... | 50 per cent |
| Withdrawal dated after October 24, 1969..... | none |

SPRING SEMESTER

| | |
|---|-------------|
| Withdrawal dated on or before February 6, 1970..... | 90 per cent |
| Withdrawal dated February 9 to February 20, 1970..... | 75 per cent |
| Withdrawal dated February 23 to March 6, 1970..... | 50 per cent |
| Withdrawal dated after March 6, 1970..... | none |

2. For a change in status from full-time to part-time student or for partial withdrawal by a part-time student, the above schedule applies to the difference in charges between the original program and the adjusted program continuing in effect.

3. A student enrolled in a full-time program who drops or adds a course and continues to be in a full-time program will have no financial adjustments of tuition made other than those involving course fees.
4. A student who is granted military leave before completing a semester is given credit for all tuition paid for that semester, for use upon his return to the University. No tuition will be refunded to a student granted military leave (see "Military Leave," page 47).

In no case will tuition be reduced or refunded because of absence from classes. Payment applies only to the semester for which a registration charge is incurred and in no case will this be credited to another semester.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Students are encouraged to provide their own cash funds until they can make banking arrangements in the community.

Financial Aid

FOR UNDERGRADUATE STUDENTS*

GEORGE WASHINGTON UNIVERSITY has a program of financial assistance for undergraduate students of scholarships, loans, grants, part-time employment, or any combination of these resources. The University participates in the National Defense Student Loan, Educational Opportunity Grant, and College Work-Study programs. Financial aid is awarded on the basis of the student's scholastic record, financial need, and qualities of leadership and character.

Scholarships are awarded for the academic year.

Applications and supporting credentials for financial aid must be filed by February 1 (entering freshmen), March 1 (enrolled undergraduate or entering transfer students) preceding the academic year of the award for the fall semester; by October 31, for the spring semester; and by May 1, for the summer session†.

An undergraduate transfer student is not eligible for scholarship funds until the academic year following completion of one full semester (15 hours) at this University with a minimum average of B (3.00). A transfer student is, however, immediately eligible for other types of financial aid.

Complete information concerning financial assistance is contained in the pamphlet "Student Financial Aid," which is available at the Office of Student Financial Aid, George Washington University, Washington, D.C. 20006.

The following scholarships are available to students in Columbian College of Arts and Sciences, the Graduate School of Arts and Sciences, the School of Education, the School of Government and Business Administration, and the

* For information concerning financial aid for students from foreign countries, see pages 38-39.

† A Summer Sessions student is eligible for consideration only if he is enrolled in this University for at least 8 semester hours in the immediately preceding spring semester or has applied for financial aid for the following fall semester.

School of Public and International Affairs. The University also offers many other scholarships which are available to students in these colleges and schools.

The George Washington University Board of Trustees Scholarships.—Full- and partial-tuition scholarships, which will begin in the fall semester and extend for four successive academic years, provided the holder maintains a *B* average, as well as a high standard of deportment, and continues to be in financial need. Candidates must plan to select a curriculum leading to a Bachelor's degree in any school of the University, except the College of General Studies. Students who have demonstrated outstanding ability in interscholastic speech and debate activities are eligible for the George F. Henigan Scholarships in Debate which are included among these scholarships.

SCHOLARSHIPS

Alumni Scholarships

American Society of Women Accountants Scholarship (1953)

Byron Andrews Scholarship (1920)

Beta Sigma Phi Scholarship (1962)

Henry N. Brawner, Jr., Foundation Scholarship Fund (1963)

Emma K. Carr Scholarships (1932)

Maria M. Carter Scholarship (1871)

Paul E. Casassa Memorial Foundation Scholarship (1968)

Chi Omega Alumnae Scholarship (1966)

Colortone Graphic Arts and Publications Scholarship (1961)

Columbian Women Scholarship Funds

Victoria Briggs Scholarship Fund (1959)

Elizabeth V. Brown Scholarship Fund (1925)

Grace Ross Chamberlin Scholarship Fund (1932)

College Women's Scholarship Fund (1926)

Columbian Women Members' Scholarship Fund (1961)

Arline Hughes Dufour Scholarship Fund (1961)

Dr. Watson W. Eldridge, Jr., and John F. Eldridge Scholarship Fund (1964)

Founders of Columbian Women Scholarship Fund (1920)

Rose Lees Hardy Foundation Scholarship Fund (1957)

Lillian Young Herron Scholarship Fund (1925)

Nellie Maynard Knapp Scholarship Fund (1915)

Marcia B. Kraft Scholarship Fund (1966)

Janet McWilliams Scholarship Fund (1954)

Marie-Louise Ralph Turner Scholarship Fund (1963)

Daughters of the American Revolution Scholarship (1952)

Isaac Davis Scholarship (1869)

District of Columbia Institute of Public Accountants Scholarship (1964)

Estella Constance Drane Scholarship (1957)

Robert Farnham Scholarship (1871)

Federal Government Accountants Association of Washington, D.C., Scholarship

Esther Brigham Fisher Scholarship (1951)

Foreign Student Scholarships (see pages 38-39)

Friendship Business and Professional Women's Club Scholarship (1967)

General Motors College Scholarship (1955)

Georgetown Business and Professional Woman's Club Scholarship (1958)

Giant Food, Inc., Scholarship Intern Program

Mildred Green Memorial Scholarship Fund (1959)
Anna Spicker Hampel Scholarship (1949)
Julian O. Hargrove Scholarship (1968)
Elma Lewis Harvey Scholarship (1921)
Hazleton Scholarship (1950)
George F. Henigan Scholarships in Debate (1967)
Jewish War Veterans' Auxiliary Scholarship (1964)
David B. and James L. Karrick, Jr., Scholarship Fund (1968)
Amos Kendall Scholarship (1869)
L. Poe Leggette Memorial Scholarship Established by W'RGW' (1968)
Eugene and Agnes E. Meyer Scholarships (1952)
Mitchell-Stancioff Scholarship (1967)
A. Morehouse Scholarship (1861)
Helen Marie and Thomas E. Orr Scholarships (1965)
Fred B. and Alma D. Pletcher Scholarship Fund (1968)
Levin M. Powell Scholarships (1886)
Phi Delta Gamma Scholarship (1956)
Research Assistantships in Data Processing and Related Fields (see page 36)
Violet B. Robinson Scholarship Fund (1966)
Henry Whitefield Samson Scholarship Fund (1966)
Lula M. Shepard Scholarships (1946)
Sigma Delta Chi Foundation of Washington, D.C., Scholarships
David Spencer Scholarship (1918)
Mary Lowell Stone Scholarship (1893)
Charles Clinton Swisher Scholarships (1941)
Tau Kappa Epsilon Scholarship (1959)
U.S. Office of Education Traineeships (1964)
University Hospital Scholarships in Medical Technology
University Players Scholarship in Memory of L. Poe Leggette (1968)
University Women's Club, Inc., Memorial Fund Scholarship (1967)
William Walker Scholarship (1824)
Abigail Ann Brown and Henry Kirk White Scholarship Fund (1963)
John Withington Scholarship (1830)
Women's Physical Education Alumnae Association Scholarship (1964)
Ellen Woodhull Scholarship (1919)
Zonta Club Scholarship (1950)

GRANTS

The following funds have been established to meet the special needs of disadvantaged students from the District of Columbia Inner-City and the Washington Metropolitan area.

Disadvantaged Students Grants-in-Aid (1968)
Educational Opportunity Grants
Inner-City Student Tuition Grants (1968)
Marriott Corporation Grant (1968)
Walt Whitman High School Key Club Grant-in-Aid (1968)

FOR GRADUATE STUDENTS*

The George Washington University program of financial assistance for graduate students includes assistantships, fellowships, traineeships, graduate scholarships, research appointments, part-time employment, and loans. Application for admission to graduate study is a prerequisite for consideration. The University participates in the National Defense Student Loan and College Work-Study programs.

Application and correspondence concerning assistantships, fellowships, traineeships, or graduate scholarships should be sent directly to the dean of the school concerned, and addressed to George Washington University, Washington, D.C. 20006. Unless otherwise specified, application and supporting credentials should be submitted no later than February 1 preceding the academic year for which the award is made.

A separate application for National Defense Student Loans or the College Work-Study Program must be submitted to the Office of Student Financial Aid by April 1 for the following academic year.

ASSISTANTSHIPS

Research Assistantships in Data Processing and Related Fields.—Available to graduate students, juniors, and seniors, in any college or school of the University. Research Assistants are expected to work 20 hours a week conducting research in support of an established research program, in programming, or in conducting individual research on an approved research project. Stipends vary from \$3,124 to \$6,449, depending on the status of the student and the length of the appointment (9–12 months). Applications must be received prior to March 1. Further information and applications are available from the Administrator, Logistics Research Project, Staughton Hall, 707 Twenty-second Street, N.W., Washington, D.C. 20037.

Resident Assistantships (men and women).—Available to graduate students in any field of study who are interested in working with the student personnel program in University residence halls. Specific duties vary with the position, but basically consist of counseling, advising student groups, and administration. Remuneration varies according to the responsibilities and demands of the position. All positions are part-time, enabling staff members to enroll as full-time students. Application should be completed before March 1. Further information may be obtained from the Office of the Associate Dean of Students for Residence Halls and Counseling.

Urban Affairs Graduate Assistantship in Political Science.

FELLOWSHIPS, INTERNSHIPS, TRAINEESHIPS

The following fellowships, internships, and traineeships are available to students in the Graduate School of Arts and Sciences, the School of Education, the School of Government and Business Administration, and the School of Public and International Affairs. The University also offers many other fellowships which are available to students in these colleges and schools. Complete information

* For information concerning financial aid for students from foreign countries, see pages 38–39.

tion is contained in the pamphlet "Student Financial Aid," which is available at the Office of Student Financial Aid, George Washington University, Washington, D.C. 20006.

Graduate Teaching Fellowships.—Available to graduate students in Master's and doctoral programs in most departments of the University. Each teaching fellow renders a designated unit of service to his major department of instruction and receives a stipend of up to \$2,800 (on a 9-month basis), plus tuition and course fees.

Research Traineeships.—Available under numerous sponsored programs in a number of departments. Currently, the basic medical science departments and the departments of Psychology and Speech and Drama offer these programs. Stipends vary; information is available from the departments and the Dean's Office of the Graduate School of Arts and Sciences.

American Civilization Fellowships

American Civilization Internships (Smithsonian Institution-George Washington University Cooperative Program)

Arlington County-George Washington University Cooperative Internship Program

Winfield Scott Blaney Fellowship in International Affairs (1961)

Thomas Alva Edison Fellowship

Elementary Teacher Education Internships

Foreign Student Fellowships (see pages 38-39)

W.K. Kellogg Foundation Fellowships (1964)

Isabella Osborn King Research Fellowships (1927)

National Defense Education Act Fellowships

National Endowment for the Humanities Fellowships

National Historical Publications Commission-George Washington University

Cooperative Research Fellowships

National Science Foundation Graduate Fellowships

National Science Foundation Graduate Traineeships

Rose Bibliography Internships

Thomas Bradford Sanders Fellowships (1928)

Scottish Rite Fellowships

Special Graduate School of Arts and Sciences Fellowships

U.S. Office of Education Fellowships (1964)

U.S. Public Health Service Predoctoral Fellowships

U.S. Public Health Service Traineeships

GRADUATE SCHOLARSHIPS

American Society of Women Accountants Scholarship (1953)

Emma K. Carr Scholarships (1932)

Paul H. and Margaret M. DeMaine Scholarships (1967)

Gamma Phi Beta Sorority Scholarships (1962)

Mitchell-Stancioff Scholarship (1967)

Paul Pearson Scholarship Fund (1940)

Phi Delta Gamma Scholarship Fund (1968)

Wolcott Foundation Scholarships

SPONSORED AWARDS FOR GRADUATE STUDY

General information regarding awards sponsored by foundations, professional and learned societies, industries, and others which may be used in support of graduate study is available at the Fellowship Information Center in the Graduate School of Arts and Sciences for students enrolled at George Washington University. Information is available on the prestige programs such as the Rhodes, Marshall, Woodrow Wilson, Fulbright, Rotary International, and Danforth, as well as many others.

As deadlines for application vary, qualified students should make inquiries well in advance of the year of planned graduate study.

LOAN FUNDS

The following loan funds are available to undergraduate and/or graduate students in Columbian College of Arts and Sciences, the Graduate School of Arts and Sciences, the School of Education, the School of Government and Business Administration, and the School of Public and International Affairs. Complete information is contained in the pamphlet "Student Financial Aid," which is available in the Office of Student Financial Aid, George Washington University, Washington, D.C. 20006.

American Medical Association Nursing Home Administration Loan Fund

Foreign Student Loan Funds (see below)

W.K. Kellogg Foundation Hospital Administration Loan Fund

Long-term Care Loan Fund

Jessie B. Martin Loan Fund (1967)

National Defense Education Act Student Loan Program

Short-term Foreign Student Loan Fund (1967)

State Guaranteed Loan Program

Ellis Stearman Emergency Loan Fund

U.S. Loan Program for Cuban Students

United Student Aid Fund Loan

University Student Emergency Loan Fund

STUDENT EMPLOYMENT

The Student and Alumni Career Services Office maintains a registry of both full-time and part-time positions available in the Washington area for undergraduate and graduate students.

After registering, students may apply at the Student and Alumni Career Services Office, Woodhull House, 2033 G Street, N.W., for interviews and referrals to positions for which they are qualified.

FOREIGN STUDENTS

Undergraduate foreign students with proven financial need who have completed one semester of full-time work (15 hours) at this University with a *B* average (3.00) or better are eligible for consideration for the Board of Trustees Schol-

arships. Scholarships are awarded in the spring for the following academic year. See instructions for applying for undergraduate financial aid, page 33.

Limited awards for graduate teaching fellowships are the responsibility of the chairman of the department or dean of the school in which the degree is to be earned. Work as a teaching fellow requires excellent knowledge of English—both spoken and written.

Long-term loan funds for undergraduate and graduate foreign students are limited in amount and are available only to those foreign-born persons who have established resident status in the United States through the Immigration and Naturalization Service.

We suggest that students who wish to study in the United States have available sufficient funds to cover expenses for one full year before attempting to enter a college or university. The cost at this University for one academic year (September–June) is approximately \$4,000. This estimate includes room and board, tuition, books, clothes, and incidental expenses; no travel, holiday, or medical expenses are included.

LAW ENFORCEMENT EDUCATION PROGRAM

This program of grants and loans, which was authorized under the provisions of the Omnibus Crime Control and Safe Streets Act of 1968, is intended to help pay the cost of tuition, fees, books, and other education expenses of officers who are employed by publicly funded law enforcement or correctional agencies. Both graduate and undergraduate studies are included and may be full- or part-time in a wide range of subject areas and degree goals. Priority will be given to law enforcement and correctional officers who are employed on the city, county, or state level. Applications are available in the Office of Student Financial Aid.

Prizes

Alpha Chi Sigma Prizes.—A *Handbook on Chemistry and Physics* awarded annually by Alpha Pi Chapter to each of three students who carry at least 18 semester hours during the freshman year and attain the highest averages in freshman chemistry.

The name and year of graduation of the student who has attained the highest quality-point index in courses in chemistry is inscribed on a bronze plaque. The winner must have had at least 16 hours in chemistry including the final semester at this University.

Alpha Delta Pi Prize.—Offered annually by Alpha Pi Chapter to the woman in the junior class with the most outstanding record in scholarship, extracurricular activities, and service to the University.

Alpha Kappa Psi Prize.—A key, awarded annually by Beta Mu Chapter to the male student who has completed 90 semester hours at this University and attained the highest average grade in business administration, economics, international business, public accounting, and public finance. The name of the winner and the year of the award is engraved on a plaque in the Office of the Dean of the School of Government and Business Administration.

American Institute of Chemists Prize.—A medal and a one-year subscription to *The Chemist* awarded annually to the graduating student majoring in chemistry who excels in scholarship, integrity, and leadership.

The Walter G. Bryte, Jr., Achievement Award.—Provided by Walter G. Bryte, Jr., Colonel, U.S. Air Force (retired), first Professor of Air Science at George Washington University. The award is presented annually primarily to that undergraduate residence hall, secondarily to any other activity at the University, which has shown, under the leadership of its elected or designated head, the most improvement or excellence in its support of the principles and aims of the United States of America and George Washington University. The hall or other activity will be awarded a cash prize, and the name of its leader and his hall or activity will be engraved on a silver trophy.

Byrne Thurtell Burns Memorial Prize.—Awarded to the senior majoring in chemistry who shows the greatest proficiency in organic chemistry, as evidenced by a comprehensive examination, and who possesses such qualifications of mind, character, and personality as to give promise of future achievement.

Wilbur J. Carr Prize.—Established in 1962 by Edith K. Carr, former Trustee of the University, in memory of her distinguished husband, who was graduated from the School of Comparative Jurisprudence and Diplomacy in 1899. It is awarded annually to that man in the graduating class of the University who has demonstrated outstanding ability in his study of international affairs and who has given evidence of possessing in marked degree the qualities which produce the good citizen and the dedicated public servant.

Chi Omega Prize.—Awarded annually by Phi Alpha Chapter to the woman in the graduating class with the highest record in economics, sociology, political science, and history; combined with general excellence.

The Columbian Women Prize.—Awarded to the senior woman who in her undergraduate life has most nearly fulfilled the objectives of Columbian Women.

Ernest Connolloy Memorial Prize.—Awarded by the Washington Personnel Association to an outstanding graduating senior in business administration who shows general excellence in studies, demonstrates superiority in one or more courses in personnel administration, and shows qualities of leadership or promise through extra-scholastic activities.

John Henry Cowles Prizes.—Two prizes, established by John H. Cowles, Grand Commander of the Supreme Council of Thirty-third Degree (Mother Council of the World) of the Ancient and Accepted Scottish Rite of Freemasonry, Southern Jurisdiction of the United States of America. Awarded annually to the senior in the School of Government and Business Administration and to the senior in the School of Public and International Affairs with the highest academic averages.

DeWitt Clinton Croissant Prize.—Awarded annually to the undergraduate student enrolled in a course in drama or active in University dramatics who submits to the English Department the best essay on drama or the theater.

E.K. Cutter Prize.—Established by Marion Kendall Cutter "for excellence in the study of English." Awarded to the member of the graduating class whose record in English, combined with general excellence, shows most marked aptitude for and attainment in English studies.

Isaac Davis Prizes.—Awarded annually to the three seniors who made the greatest progress in public speaking while enrolled in the University. Awards are to be determined by a public-speaking contest in which the participants de-

liver original orations. Only members of the senior class of Columbian College of Arts and Sciences who are candidates for the degree of Bachelor of Arts or Bachelor of Science are eligible to compete.

Delta Gamma Prize.—Awarded annually by Beta Rho Chapter to the woman who, at the end of her freshman year, has the most outstanding record in scholarship, extracurricular activities, and service to the University.

Henry Grattan Doyle Memorial Prize.—Established in memory of Henry Grattan Doyle, a former Dean of Columbian College, and awarded annually to an outstanding senior student for excellence in Spanish.

Elton Prize.—Established by the Reverend Romeo Elton, of Exeter, England, and awarded annually to the student with the highest average in the most advanced course in the Greek language and literature.

Jesse Frederick Essary Prize in Journalism.—Established by Helen Essary Murphy and awarded annually to a student who has given promise of sound citizenship and who submits the best printed and published evidence of ability in "forthright reporting" and good journalistic writing, in a student publication or elsewhere.

Joshua Evans III Prize in Political and Social Sciences.—A memorial prize "established by friends because of an outstanding life." Awarded annually to that man in the graduating class "who has demonstrated his signal ability in the social and political sciences and who has given promise of the interpretation of that ability in good citizenship among his fellows."

Willie E. Fitch Prize.—Established by James E. Fitch in memory of his son. Awarded annually to a senior student for the best examination in chemistry.

Alice Douglas Goddard Prize.—A memorial established by Frederick Joseph Goddard, of Georgetown, D.C. Awarded annually to the upper-division student making the highest average in American literature.

Edward Carrington Goddard Prize.—Established by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D.C., in memory of Edward Carrington Goddard, class of 1881. Awarded to the junior or senior student making the highest average in the French language and literature.

Morgan Richardson Goddard Prize.—A memorial established by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D.C. Awarded to the junior or senior student making the highest average in the following fields: business administration, economics, international business, and public accounting.

Gardiner G. Hubbard Memorial Prize in United States History.—Established by Gertrude M. Hubbard in memory of her husband and awarded annually to that member of the graduating class majoring in history who has maintained the highest standing in courses in United States history.

Kappa Kappa Gamma Prize.—Awarded annually to a full-time lower-division student for excellence in Biological Sciences 12.

Minna Mirin Kullback Memorial Prize.—Established in 1968 by Solomon Kullback in memory of his wife. Awarded annually by a committee of faculty members of the Department of Statistics to a full-time undergraduate or graduate student majoring in statistics, who will have completed 18 semester hours of statistics courses by the end of the spring semester.

Craig Sterling Logan Memorial Prize.—Established by Washington City Rho Chapter of Sigma Alpha Epsilon. A plaque awarded annually to an outstand-

ing freshman man of high academic achievement who has participated in extracurricular activities for the betterment of the University.

Mortar Board Prize.—A silver cup awarded annually to the woman student in the sophomore class having an average of *B* or higher and the most outstanding record in activities.

Vivian Nellis Memorial Prize.—Awarded to a student in the English Department who has shown special promise in the field of creative writing.

Old Men Prize.—A plaque awarded annually by the Old Men Board to a man in the junior class who has made outstanding contributions to student activities.

Omicron Delta Kappa Prize.—A plaque awarded annually by Alpha Delta Circle to "that member of the senior class who throughout his course has done the most constructive work in the furtherance and upbuilding of the University student activities."

Order of Scarlet Prize.—Awarded annually by the Board of Governors of Order of Scarlet to that member of the sophomore class who has the most outstanding record in extracurricular activities and service to the University.

Panhellenic Association of Washington, D.C., Prize.—A trophy to be awarded to the Panhellenic Sorority maintaining the highest yearly scholastic average at the University for the previous year.

Phi Delta Kappa Prize.—Awarded annually by Beta Gamma Chapter to the outstanding senior man in the teacher education program in the School of Education.

Phi Eta Sigma Prize.—A choice book selected from the field of the recipient's major, awarded annually by the George Washington University Chapter to the male student attaining the highest scholastic average in his first full semester of work. The winner's name is engraved on a plaque in the Office of the Dean of Columbian College of Arts and Sciences.

Pi Beta Phi Prize.—Awarded annually by the District of Columbia Alpha Chapter to the woman member of the senior class who throughout her college course has done the most constructive work in the promotion of student activities among the women of the University.

Pi Lambda Theta Prize.—Awarded annually by Alpha Theta Chapter to the outstanding senior woman in the teacher education program in the School of Education.

Psi Chi Prizes.—Two prizes awarded annually by The George Washington University Chapter to the best undergraduate student in experimental psychology and to the graduate student submitting the best Master's thesis in psychology.

Ruggles Prize.—Established by Professor William Ruggles, awarded annually to a candidate for a Bachelor's degree, for excellence in mathematics.

Hermann and Johanna Richter Schoenfeld Prize.—Established in grateful appreciation of the inspired teaching and devotion to his students of Dr. Hermann Schoenfeld, who for more than 20 years until his death in 1926 headed the Department of German. Hermann Schoenfeld, Ph.D., LL.D., was widely recognized as a scholar of distinction whose service on the faculty added prestige to the University. This prize is given annually to a member of the graduating class for excellence in the historical and cultural phases of German studies.

Smith, Kline and French Prize.—Awarded annually to the student who submits the best undergraduate research project in psychology.

Society of Colonial Wars in the District of Columbia Prize.—A gold medal awarded to a candidate for a graduate degree who, in the judgment of the Faculty of the Department of History, submits a thesis or dissertation demonstrating excellence in historical research in American Colonial history. The University reserves the right to withhold the award if no thesis or dissertation attaining the required degree of excellence is submitted.

Staughton Prize.—Established by the Reverend Romeo Elton and awarded annually to the student making the best record in the most advanced course in the Latin language and literature.

James MacBride Sterrett, Jr., Prize.—Established by Professor Sterrett in memory of his son. A copy of the *American Institute of Physics Handbook*, awarded annually to the student who obtains the highest average in Physics 1 and 2 or 1 and 30.

Charles Clinton Swisher Historical Club Prize.—Established by the Charles Clinton Swisher Historical Club and augmented in 1941 by the bequest of Professor Swisher. Awarded annually to the student who submits the best essay covering some phase of medieval history.

Thomas F. Walsh Prize.—Awarded annually to the student who submits the best essay in Irish history.

Alexander Wilbourne Weddell Prize.—Established by Virginia Chase Weddell in memory of her husband. Awarded annually to a candidate for a degree who writes the best essay on the subject of "the promotion of peace among the nations of the world." The prize essays shall become the property of the University and shall not be printed or published without the written consent of the University. The University reserves the right to withhold the award if no essay attaining the required degree of excellence is submitted.

Regulations

A STUDENT ENROLLED in the University is required to conform to the following University regulations and to comply with the rules and regulations of the college, school, or division in which he is registered.

A student who withdraws or is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled. If such falsification is discovered after the student has established an academic record at the University, he may be subject to dismissal from the University. Such a student will be ineligible (except by special action of the Faculty) for subsequent registration in the University.

ATTENDANCE

A student may not attend classes until registration is completed and fees due are paid. Regular attendance is required. A student may be dropped from any course for undue absence.

SCHOLARSHIP REQUIREMENTS

A student who fails to maintain the scholarship requirements of the college, school, or division in which he is registered may be dismissed from the University.

GRADES

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors.

Undergraduate.—The following grading system is used: *A*, excellent; *B*, good; *C*, average; *D*, passing; *F*, failing; *NC*, no credit; *CR*, credit; *H*, honors; *I*, incomplete; *W*, authorized withdrawal.

Graduate.—The following grading system is used: *A*, excellent; *B*, good; *C*, minimum pass; *F*, fail; *I*, incomplete; *CR*, credit; *W*, authorized withdrawal.

Whenever a grade has not been assigned, the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the dean's council of the college, school, or division concerned. An incomplete which is not removed within one calendar year is automatically changed to an *F*. An incomplete cannot be removed by repeating the course.

An undergraduate student may not repeat for credit a course in which he has received a grade of *D* or above and a graduate student may not repeat for grade a course in which he has received a grade of *C* or above, unless required to do so by the department concerned. A written statement to this effect must be submitted to the Registrar by the appropriate departmental chairman.

THE QUALITY-POINT INDEX

Scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours for which the student has registered, both based on his record in this University. (Grades recorded for Physical Education 5 or 6 are not considered in computing the quality-point index.) Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered. Courses marked *W*, *I*, *NC*, or *CR* are not considered in determining the index, except that courses marked *I* will be considered when a formal grade is recorded. An incomplete which is not removed within one calendar year is automatically changed to an *F*. Grades in courses taken at another institution are not considered in computing the quality-point index.

CREDIT/NO CREDIT OPTION

A junior or senior student in the Upper Division of Columbian College of Arts and Sciences, the School of Education, the School of Government and Business Administration, or the School of Public and International Affairs, who has a cumulative quality-point index of 2.50 or better, may, with the approval of his adviser and dean, take one course a semester and receive a grade of *CR*, credit.

or NC, no credit, which will be recorded on the student's transcript but will not be reflected in his quality-point index. No student will be allowed to take more than 4 credit/no credit courses. A student must sign up for such an option at registration. Under no circumstances may a student change from credit/no credit status to graded status, or vice versa, after the end of registration. Courses required in the Lower Division curriculum of Columbia College of Arts and Sciences and those required in the student's major field may not be taken on the credit/no credit basis. A transfer student may not choose this option until the second semester of his enrollment at this University.

EXAMINATIONS

Examinations for undergraduate courses are scheduled at the end of each semester or at the completion of the course.

ACADEMIC DISHONESTY

Academic dishonesty on the part of any student will result in a disciplinary grade of *F* for the course involved and also may, upon the recommendation of the appropriate dean's council, result in his suspension from the University for a stated period, at the end of which time he may petition for readmission. The disciplinary grade of "Failure—Academic Dishonesty" will be recorded for the course involved, and this grade will be employed in the computation of the quality-point index. A student so suspended shall be withdrawn from all other courses except those in which all work has been completed.

WITHDRAWAL

Withdrawal from a course or from the University requires the permission of the dean of the college, school, or division in which the student is registered. Permission to withdraw from the University will not be granted a student who does not have a clear financial record (see pages 32–33).

Withdrawal between the last working day* in October and the end of the fall semester and between the last working day* in February and the end of the spring semester is permitted only in exceptional cases.

All charges for courses dropped without the approval of the dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

CHANGES IN PROGRAM OF STUDIES

Changes within a College, School, or Division.—A student may not substitute one course for another, drop courses (see "Withdrawal," above), change his status from credit to audit or audit to credit without the approval of the dean of the college, school, or division in which he is registered.

Change from one section to another of the same course may be made with the approval of the dean and the department concerned.

Change from one major subject to another within the same college or school may be made with the approval of the dean. All requirements of the course of study to which the change is made must be met.

* The University work week is Monday through Friday, inclusive.

Transfer within the University.—Except in cases of normal progression from the lower division of Columbian College of Arts and Sciences in a regular baccalaureate program, application for transfer to another college, school, or division must be made to the appropriate admitting office on the form provided by that office and must be approved by the deans concerned. Application for transfer from the lower division of Columbian College to the upper division or to Bachelor's candidacy in the School of Education, the School of Government and Business Administration, or the School of Public and International Affairs must be made on the appropriate form. This form is available in the Office of the Dean of Columbian College.

A maximum of 45 semester hours earned in the Division of University Students can be applied toward a Bachelor's degree in a degree-granting college or school of the University. Work done in the Division of University Students will not be counted toward a graduate degree unless prior written approval, obtained from the relevant degree-granting college or school, has been filed in the Office of the Dean of the Division of University Students (see pages 169-70).

Students transferring within the University are advised to study carefully the graduation requirements on pages 47-48 and to note that in all undergraduate divisions, except the lower division of Columbian College of Arts and Sciences, 30 semester hours, including at least 12 semester hours in the major field, must be completed while registered in the school or college from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly the requirements he must fulfill. (For residence requirements in the lower division of Columbian College of Arts and Sciences, see pages 75 and 81.)

CREDIT

Credit is given only after registration for a course and satisfactory completion of the required work, or upon the assignment of advanced standing in accordance with the regulations of the several colleges, schools, and divisions.

Auditing.—In special instances, a person who has been admitted to the University may be registered, with the permission of the instructor, as an "auditor" in a class (no academic credit). An auditor is not required to take active part in the exercises or to take examinations. A student who takes a course as an auditor may not repeat it later for credit.

BALANCE SHEET

On request, the Registrar will issue to undergraduate degree candidates a balance sheet showing the amount of work completed and the requirements remaining to be met for the degree. A second balance sheet is issued only if the student changes major or degree objectives.

TRANSCRIPTS OF RECORD

Official transcripts of student records are issued on request of the student or former student who has a clear financial record. A fee of one dollar is charged for each transcript.

SUMMER SCHOOL CREDIT

A student who plans to attend summer school at another institution and apply credit so earned toward graduation from this University must first secure the written approval of his dean. In no event will credit in excess of what might be earned in a similar period in this University be recognized.

CONTINUOUS REGISTRATION

Degree candidates are expected to maintain continuous registration until *all* degree requirements are satisfied. Students who have completed course registration (including the thesis) must maintain continuous registration by paying the "continuous registration" fee (see page 30). By failing to register for one semester or more, the student breaks his registration and must be readmitted (see "Readmission," page 26). A "Readmitted Student" is required to satisfy the curriculum requirements existing at the time of his readmission.

Students must be registered during the summer if they elect to take courses, are taking required examinations, are receiving guidance toward theses or dissertations, or are expecting to graduate at the end of the Summer Sessions.

MILITARY LEAVE

A student called to active duty may be granted military leave for the period of active duty, upon presentation to his dean of a copy of his orders and a petition for such leave. The maintenance of "continuous registration" is not required of the student on military leave; however, he must apply for readmission to the University well in advance of the semester in which he expects to return. If a student is granted military leave before he completes a semester for which he has paid all or part of his tuition, this payment will be credited to his account for use upon his return to the University. In no case will tuition be refunded to a student granted military leave.

GRADUATION REQUIREMENTS

Degrees are conferred in February, June, and September.

To be recommended by the Faculty for graduation a student must have met the admission requirements of the college or school in which he is registered; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered; and be free from all indebtedness to the University. Registration, either for course work or on the "continuous registration" fee basis, is required for the semester or summer session immediately preceding the awarding of a degree.

Application for Graduation.—An "Application for Graduation" form must be filed and the appropriate fee paid at the time of registration for the last semester or summer session of the senior or final year. Students completing degree requirements during the Summer Sessions will be awarded diplomas (no formal convocation) September 30, *provided* they have completed all degree requirements and have applied for graduation as a part of registration for the Summer Sessions.

Scholarship.—In all undergraduate divisions of the University a quality-point index of at least 2.00 is required for graduation.

The graduate student must meet the scholarship requirements for the particular degree for which he is registered.

Curriculum.—Minimum curriculum requirements for each degree are stated under the college or school offering work in preparation for the degree.

Residence.—Unless otherwise specified, in all undergraduate divisions of the University, a minimum of 30 semester hours, including at least 12 hours in the major field, must be completed while registered in the school or college from which the degree is sought. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work may be counted toward the residence requirement, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the dean of the college or school concerned to pursue work elsewhere, the work of the senior or final year must be completed in the college or school from which the degree is sought.

The graduate student must meet the residence requirements for the particular degree for which he is registered.

National Teacher Examinations.—All candidates for the degree of Bachelor of Arts in Education are required to take the National Teacher Examinations.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Thesis or Dissertation.—A thesis or dissertation submitted in partial satisfaction of requirements for a degree must be presented in its final form to the Dean of the college or school concerned no later than the date specified in the University calendar.

Accepted theses and dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the appropriate dean. See the appropriate college or school in this catalogue for regulations governing theses and dissertations.

HONORS

With Distinction.—In all undergraduate divisions of the University the degree may be conferred "With Distinction," at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution. To be eligible, a student must have completed at this institution at least one-half of the work required for the degree.

Special Honors.—Special Honors may be awarded by the Faculty to any member of the graduating class for outstanding achievement in the student's major field on recommendation of the major department.

The student must (1) have his candidacy for Special Honors approved by the faculty member representing the major department or field not later than the beginning of the senior year, (2) meet such other conditions as may be set at the time his candidacy is approved, (3) maintain a quality-point index of at least 3.00 on all work taken at this institution, and (4) have completed at this institution at least one-half of the work required for the degree.

THE LIBRARY

All students registered in the University have the privilege of using the University Library. Its stacks are open, and all students are welcome to browse at their leisure. The Student Identification Card, issued upon the payment of fees, must be presented when books are borrowed for outside use.

The loan period for most books available for outside circulation is 30 days, nonrenewable except for graduate students. A fine of 25 cents is charged for each day a book is overdue. Any book which circulates is subject to recall by the Library at any time if needed for reserve or other use. Reserve books must be used in the reserve reading room when the Library is open, except that they may be withdrawn for overnight use beginning at 8:30 p.m. A fine of 50 cents is charged for each hour or fraction thereof that a reserve book is overdue. Grades of a student are withheld until his library record is clear.

All students using the University Library are expected to be familiar with its detailed regulations, printed in the *Student Handbook* and available separately on application to any of the Library's service desks.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

UNIVERSITY POLICY ON THE RELEASE OF STUDENT INFORMATION

In general, the policy of the University is one of attempting to keep the student's record confidential and out of the hands of those who would use it for other than legitimate reasons. At the same time, the policy must be flexible enough not to hinder the student, the University, or the community in their legitimate endeavors.

No information concerning a student will be released, except as noted below, unless required by court order or subpoena, or requested in writing by the student:

1. Information which is of public record, such as whether or not the student is currently enrolled; dates of attendance; whether or not he received a degree; current address and telephone number; the school or college in which he is enrolled.
2. The issuance of formal transcripts of record to recognized institutions of higher learning; the certification of academic achievement to the various recognized professional associations (law, medicine, engineering, education, etc.); and the inspection of records, under appropriate supervision, by properly validated representatives of government investigative agencies.

UNIVERSITY POLICY ON SELECTIVE SERVICE INFORMATION

The University notifies draft boards of a student's academic status only when the student requests or authorizes, in writing, that the draft board be notified. A Selective Service Information Card is put into the registration packet of each male student registered on campus, exclusive of those in the National Law Center and the School of Medicine. This card contains the following statement:

By my signature below, I hereby authorize the University, to notify my draft board of my academic status in the University, or of any changes in academic status that occur during this semester.

If the student signs the card, the University then automatically notifies the draft board. If the student does not sign the card, no notification is sent. National Law Center students and students in the School of Medicine should check with the appropriate dean's office for details of the policy in their school.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property. A "Lost and Found" Office is maintained in the Campus Police Office.

RECENTLY ESTABLISHED REGULATIONS

An Appendix (pages 452-53) contains regulations recently approved by the University's Board of Trustees.

Cooperative Programs

CONSORTIUM OF UNIVERSITIES OF THE WASHINGTON METROPOLITAN AREA, INC.

FIVE UNIVERSITIES in Washington, D.C.—American University, Catholic University of America, *George Washington University*, Georgetown University, and Howard University—have formed a Consortium through which they are coordinating the use of their respective facilities. As the arrangement develops, juniors, seniors, and graduate students in approved programs leading to degrees in any one of the universities will increasingly have the opportunity to select from the combined offerings of all five universities the particular courses which best meet their needs.

Participation is limited to campus degree candidates. The following, however, are excluded: freshman and sophomore students, and students in Canon Law, Dentistry, Medicine, and Theology. Law students are also excluded from participation, except for candidates for the degree of Master of Laws at *George Washington University* and Georgetown University.

Special courses, such as private instruction (as in music or art) or tutorial study and courses in preparation for passing the language requirement, are excluded from the Consortium program. Also excluded are courses offered in Reserve Officer Training Corps programs.

Students are encouraged to study the announcements of programs of all five universities. In order to participate in the Consortium program, the graduate student must obtain the approval of his adviser; the undergraduate student must obtain the approval of his dean. *A student may not take courses at another university that are available at his own.*

Registration forms and instructions are available from the registrar of the student's university. The student registers and pays at his own university for all Consortium courses.

See page 28 for information concerning registration for Consortium courses.

AIR FORCE RESERVE OFFICERS' TRAINING CORPS (AFROTC)

The Department of Aerospace Studies at Catholic University of America, under provisions of an agreement between George Washington University and Catholic University, offers a two-year AFROTC program.

The successful completion of the program qualifies the student for a reserve commission in the United States Air Force upon graduation. Exceptionally well-qualified students may receive a Regular Officer appointment. The program is designed to provide education that will develop skills and attitudes vital to the career professional Air Force Officer. Emphasis is placed on qualities of leadership and other attributes essential to progressive advancement into positions of increasing responsibility as commissioned officers in the Air Force.

Full-time students who have two years remaining toward a baccalaureate or graduate degree are eligible to enter the program. Each student must meet physical and mental standards set by the Air Force. Candidates must complete six weeks of Field Training, conducted by the Air Force at designated bases, during the summer preceding enrollment into the program. A student must have and maintain a quality-point index of 2.00 or its equivalent. Applications must be made *early* in the academic year prior to the one of enrollment in the program, so that all qualification criteria may be met in time for selection consideration in the spring.

The program is offered at Catholic University. At the time of enrollment, a registration fee must be paid. There is no tuition charge. Students in the program receive a monthly retainer fee of \$50. Uniforms and textbooks are furnished without cost. Students participating in the Field Training phase are paid at a rate established by the U.S. Government (approximately \$120 a month) and are also furnished travel to and from the Field Training base.

Interested students should consult the Department of Aerospace Studies, Catholic University of America, Washington, D.C. 20017.

GRADUATE STUDY AND RESEARCH PROGRAMS

The University and the Smithsonian Institution cooperate in a program in American Civilization leading to the degree of Doctor of Philosophy. Graduate academic work taken at George Washington University and special seminars and dissertation research in the museums of the Smithsonian Institution provide unusual opportunity to the student specializing in American Civilization.

A parallel cooperative program in American Civilization has been established by the University and the Library of Congress. Special seminars and reading courses and dissertation research in library-related subjects, together with the

graduate academic work at the University, give the student an educational and training experience that only this combination can provide.

The University and the National Bureau of Standards have entered into a cooperative agreement to further educational opportunity at both the University and the Bureau. This arrangement holds great promise for graduate study and research, particularly in the physical sciences and engineering.

The Speech and Hearing Clinic

Director of Speech Pathology and Audiology J.W. Hillis

THE SPEECH AND HEARING CLINIC, Suite 804, Joseph Henry Building, 2100 Pennsylvania Avenue, N.W., offers diagnostic and remedial work for children and adults with such communication difficulties as stuttering, lisping, cleft palate speech, cerebral-palsied speech, and voice, articulatory, and hearing problems. Diagnostic and remedial work is also available for persons with nonstandard language usage due to such conditions as hearing loss, brain damage, mental retardation, and environmental factors.

Fees.—The fee for an initial evaluation is \$20. Fees for additional specialized testing are dependent on the testing involved. The fees for individual speech or hearing therapy range from \$3 to \$10 a session. Fees are reduced for full-time students enrolled in the University and for persons receiving group therapy. Fees are payable at the Office of the Cashier.

The Reading Center

Director Mary Ellen Coleman

THE READING CENTER, 2018 Eye Street, N.W., offers individual diagnostic and corrective services for all levels: primary, elementary, secondary, and adult. In addition, special reading improvement classes are conducted on the high school, college, and adult levels.

A complete diagnosis includes psychological tests; vision, hearing, and dominance tests; and the various reading and spelling tests. Results are interpreted, and a written report is presented in conference with the parents or the individual.

The special reading classes for high school students, college students, and adults are offered throughout the year at stated intervals. Special classes for study skills and spelling are also available. Emphasis is placed on improvement of vocabulary, speed, comprehension, and study skills. Machines such as the tachistoscope, rate accelerator, and controlled reader are also used for increasing speed of comprehension.

Reading Clinic.—The fee for individual diagnosis is \$60; for individual instruction, \$8 a lesson; for semi-individual instruction, \$6 a lesson; for instruction in small groups with common reading difficulties, \$5 a lesson.

Reading Improvement.—Classes are offered for students on high school and adult levels, including college and graduate students. Students are grouped according to needs, and emphasis is placed on vocabulary, study skills, spelling, and speed of comprehension. The fee for full-time students currently registered in the University is \$60 for twenty lessons; for other clients, \$100 for twenty lessons.

All fees are payable in advance at the Office of the Cashier.

Veterans Education

THE OFFICE OF THE REGISTRAR, Luther Rice Hall, 2121 Eye Street, N.W., assists students entitled to educational benefits as veterans or war orphans with any problems which may arise concerning their benefits. This Office also processes certification of enrollment and attendance to the Veterans Administration so that monthly allowances will be paid.

When feasible, students entitled to benefits as veterans or war orphans should consult the Office of the Registrar prior to submitting application to the Veterans Administration. All such students should obtain the instruction sheet issued by the Office of the Registrar, which sets forth requirements to be fulfilled before certification of enrollment can be made to the Veterans Administration, and which includes other information of general interest.

The Veterans Administration is at 2033 M Street, N.W., Washington, D.C. 20421.

University Computer Center

Director R.E. Thomas

THE UNIVERSITY COMPUTER CENTER is located on the first floor of Stuart Hall, 2013 G Street, N.W. The facilities of the Center are available for academic purposes to all registered students and to members of the instructional staff. The Center has as its principal mission the provision of a powerful computing system which serves the University in its educational and research endeavors. The Center's programming staff concentrates its efforts in conducting faculty and staff seminars, consulting with users in the preparation of complicated programs, and carrying out computer-oriented research.

The Computer Center equipment consists of an IBM system 360 Model 50 computer with 256,000 positions of core storage, a 2,314-disk storage unit providing on-line storage for more than 200 million characters, a card read/punch, a high speed line printer, and four tape drives. The principal languages that are available are FORTRAN IV, COBOL, Programming Language One

(PL/1), Assembly Language, Report Program Generator (RPG), and ALGOL. In addition, there are numerous utility, statistical, data manipulation, and simulation systems available in the Computer Center Library of Programs. Facilities are available on a first-come first-served basis for preparation of programs and data.

Computer programming courses are offered by the School of Government and Business Administration, the Department of Statistics, and the School of Engineering and Applied Science. In addition, many other departments offer courses that utilize the computer as a research adjunct to course work.

The Computer Center is open 24 hours a day Monday through Thursday and until midnight on Friday. Saturday hours are 9 a.m. to 5 p.m.

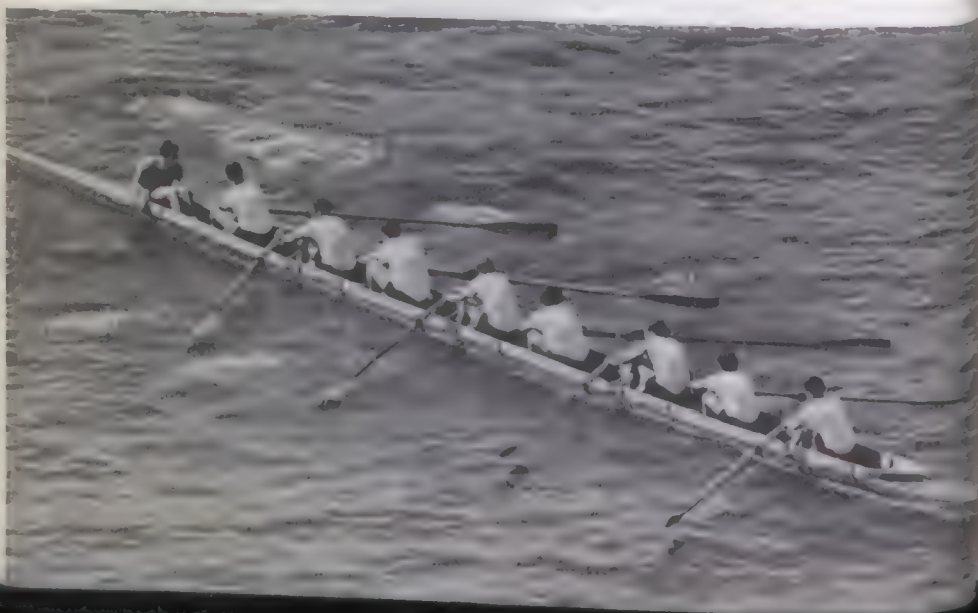
General Alumni Association

THE OBJECTIVES OF THIS ASSOCIATION are to unite the graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and to promote the general welfare of the University.

Eligible members are those who have matriculated in any school of the University and who have left the University in good standing, or any person who is or has been a member of the teaching, research or administrative staff of the University, or of the Board of Trustees of the University. Active members are those eligible members who are current contributors (dues or otherwise) to or life members of the George Washington University General Alumni Association, the Alumni Association of any school of the University, or contributors to the Annual Support Program.

The Alumni Office is in Bacon Hall, 2000 H Street, N.W., Washington, D.C. 20006.

All alumni are urged to keep the Alumni Office informed of changes of address or occupation and to supply information with regard to their fellow alumni.



STUDENT LIFE

Vice President for Student Affairs W.P. Smith, Jr.
Associate Dean of Students Marianne Ruth Phelps
Associate Dean of Students P.R. Sherburne
Assistant Dean of Students Elizabeth Garraway
Assistant Dean of Students David Speck
Housing Administrator Ann Webster

THE OFFICE OF THE VICE PRESIDENT FOR STUDENT AFFAIRS develops Student Life programs, policies, and procedures to complement the University's formal instruction program. These activities are implemented through the offices of the Associate Deans of Students, Health Services, International Students, Psychological Clinic, Student and Alumni Career Services, Student Activities, residence halls, and University Center.

STUDENT SERVICES

RESIDENCE HALLS

Complete information concerning the University's residence halls is available from the Housing Administrator, George Washington University, Washington, D.C. 20006. Information concerning off-campus housing near the University may be obtained at this Office. The reservation of rooms in private houses must be made by students.

Admission to the University does not include a room reservation. The student will receive, with his notification of acceptance, university residence hall information, an application for residence hall space, a medical examination form, and a declaration of intent to attend the University. The medical examination form must be completed by the applicant and his physician and returned to the University Health Services Office. The application for residence hall space must be accompanied by a \$100 nonrefundable deposit (\$200 for applicants admitted by early decision). Early decision students must submit the deposit by January 15. The housing deposit is credited toward the second semester's room charge. Rooms are leased for the academic year, and payment must be made in advance of each semester.

All unmarried freshmen under the age of 21 who are enrolled for twelve or more hours of academic work during the fall or spring semester or six or more hours during a summer session are required to live in the University residence halls or at home with their parents or guardians. In exceptional cases permission to live elsewhere may be granted by the Housing Administrator.

1969-70 Residence Hall Rates per Person for Two Semesters

| | <i>Room and Food Service</i> | <i>Room Only</i> |
|---|----------------------------------|----------------------|
| For Men: | | |
| Adams Hall | | |
| double room..... | \$1,220 | \$650 |
| triple room..... | 1,170 | 600 |
| Calhoun Hall | | |
| double room..... | 1,170 | 600 |
| triple room..... | 1,120 | 550 |
| Madison Hall (graduate and professional students) | | |
| double room..... | 1,220 | 650 |
| Mitchell Hall—single room..... | 1,270 | 700 |
| Welling Hall | | |
| single room..... | 1,220 | 650 |
| double room..... | 1,120 | 550 |
| For Women: | | |
| Crawford Hall (upperclass women)—double room..... | 1,170 | 600 |
| Graduate Women's Hall—apartment for three..... | 1,270 | 700 |
| Strong Hall (upperclass women) | | |
| single room..... | 1,270 | 700 |
| double room..... | 1,220 | 650 |
| Thurston Hall | | |
| double room, triple room, large suite for four..... | 1,220 | 650 |
| smaller suite for four, suite for six..... | 1,170 | 600 |

FOOD SERVICE

Residents of Thurston Hall and all resident freshman men under twenty-one are required to participate in the food service plan. The plan is optional for all other residents. Well-balanced meals are served cafeteria style seven days a week (20 meals). Food service payment does not cover University holidays or vacation periods. All meal cards admit to the dining rooms in Thurston Hall and Mitchell Hall. Residents of Calhoun, Crawford, Madison, Strong, and Welling halls are given preference for the use of the dining room in the University Center.

UNIVERSITY CENTER

Director B.C. Bell

The term University Center encompasses a building, an organization, and a program. The building is the University's center for community life. It is the physical instrument for implementation of the programs and objectives of the organization.

The organization, composed of students, faculty, administrators, and alumni, provides an informal education medium for individual and group activities adapted to the leisure-time interests and needs of the college community. It also provides training for those directly involved in management and programming for the Center.

The primary purpose of the George Washington University Center is the continuing development of a broad cultural, intellectual, social, and recrea-

tional program. Its secondary purpose is the provision of its various services and facilities to the campus community for the development of community life.

The Center houses a wide range of facilities to serve the needs of the campus, including dining rooms and a rathskeller, a bookstore, lounges and study areas, a theater, bowling lanes and a billiard room, a faculty club, student organization offices and workrooms, meeting and conference rooms, an information center, music listening rooms, social areas, shower and dressing rooms, lockers, and parking accommodations.

HEALTH SERVICES

Director R.B. Castell, M.D.

The Health Services Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open Monday through Friday, from 9 a.m. to 10 p.m. during the academic year and from 9 a.m. to 9 p.m. during the Summer Sessions, with physician in attendance. On Saturdays, a physician is available from 9 a.m. until 12 noon. For night and weekend emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges also include hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Services*. All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses, orthopedic examinations and application of cast or other appliance, laboratory and X-ray work, and surgical operations, must be paid by the student.

These medical benefits apply only to illness or disability incurred while currently enrolled in the University. They do not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student may, if he so desires, engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) the Director of Health Services is empowered to limit or deny the medical benefits when, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education.

* See rule (5) for exception.

HEALTH AND ACCIDENT INSURANCE

In addition to the above services, the Health Services Staff has arranged for Health and Accident Insurance, on an elective basis, for all full-time students. Arrangements for insurance coverage are the responsibility of the student, and should be made during the fall or spring registration period, or at the very latest within five school days after the end of the registration period. Payment must be made at the time the student subscribes to the policy.

Coverage is effective, whether at the University, at home, or elsewhere, for the entire six-month period of the policy—September through February for those subscribing in the fall, March through August for those subscribing in the spring.

This policy contract is between the individual student and the insurance carrier and is accepted at any hospital or emergency room that accepts this type of medical work. Details of the policy are contained in a folder available at the Health Services Office.

PSYCHOLOGICAL CLINIC

Director E.L. Phillips

The George Washington University Psychological Clinic, 718 Twenty-first Street, N.W., offers services which are available primarily to students enrolled in the University and secondarily to high school students and to adults in the community. The latter are selected by the Clinic in accordance with training and research interests of the Clinic Staff.

The services are designed to assist individuals in the evaluation of their educational, personal, and social lives; diagnose academic difficulties and provide remedial measures such as study-habits instruction and programmed instruction; and refer individuals to qualified agencies for assistance with problems not handled by the Clinic. Behavior therapy, individual and group psychotherapy, and individual and group counseling are available.

The Clinic also provides special assessments including: diagnostic measures prescribed by the School of Engineering and Applied Science, admissions tests for the University and for other selected educational institutions, and some selected assessments for business and industry.

Fees.—For students who are currently registered as degree candidates in the University, the fee is \$20; for students currently enrolled in the University but not as degree candidates, the fee is \$60; for graduates of the University, \$60; for community clients, \$85. Fees for specialized testing are dependent upon the services involved. All fees are payable at the Office of the Clinic.

INTERNATIONAL STUDENTS

Adviser W.A.R. Walker

International House, 2129 G Street, N.W., is the campus center for students from foreign countries. It serves also as the headquarters of the International Students' Society which seeks to promote international friendship and understanding by welcoming to its membership students from all countries, including those from the United States.

The Adviser to International Students has his Office in International House and is available for consultation each day throughout the school week.

STUDENT AND ALUMNI CAREER SERVICES OFFICE

Director of Placement Gertrude McSurely

The Student and Alumni Career Services Office, Woodhull House, 2033 G Street, N.W., provides assistance to degree-seeking students and alumni seeking full-time, part-time, temporary, or permanent employment.

The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration. The Office administers the On-campus Industrial and Government Recruitment Interview Program for seniors and graduate students, in which private companies, government agencies, service organizations, public school systems, and universities participate. Prospective teachers may establish permanent credentials files in the Student and Alumni Career Services Office. This service includes files for alumni seeking college and university faculty and administrative positions. The Office also provides individual interviews for students and alumni wishing career guidance.

RELIGIOUS LIFE

The University recognizes the contribution that religion makes to the lives of students and encourages them to participate in the various religious organizations of their own choice. Catholic, Jewish, and Protestant bodies sponsor these groups and form a link between the University and the religious community. The advisers of the religious organizations are available for counseling.

Religious services in various traditions are provided regularly for the University community as announced.

INTER-FAITH FORUM

A weekly luncheon-discussion activity called "As I See It" features guests who are asked to speak and participate in open discussion on topics concerning religious, social, and moral issues. The discussions are held in Woodhull House, 2033 G Street, N.W., Wednesdays from 12 noon to 1 p.m. Schedules are obtainable at the Religious Activities Office, 2106 G Street, N.W.

STUDENT ACTIVITIES

Activities Coordinators J.H. Boyar, Lianna Larabee

The offices of the Vice President for Student Affairs, the Associate Deans of Students, and the Director of the University Center are responsible for all co-curricular phases of student life, such as student activities, social life, and housing.

STUDENT ACTIVITIES OFFICE

The Student Activities Office is a part of the Office of the Vice President for Student Affairs. It serves as a clearing house and a coordination center for all co-curricular student activities. The staff assists student organizations in utilization of University resources, leadership training, service projects, and gen-

eral programming. The Office also serves as a central information agency where past and present records and rosters of all campus organizations are filed and available to the student body. Students interested in participating in these phases of University life should acquaint themselves with the facilities and functions of this Office.

STUDENT GOVERNMENT

Student Assembly.—The University believes in encouraging the development of responsibility in students by delegating to them considerable authority in the management of student activities. To this end, the organization of the University includes the Student Assembly, which, with the advice of the Coordinators of Student Activities, is responsible for the conduct of all student activities. The Student Assembly is elected annually by the student body.

Committee on Student Life.—A major function of the Committee on Student Life is to review acts of the Student Assembly or of any other group engaged in extracurricular activities.

A second function is advisory. The Committee may offer recommendations to the Student Assembly on which the Assembly must act at its next regular meeting. It may also make recommendations to the President of the University at his request or on its own initiative.

Despite its broad powers, the Committee acts only when it believes that a vital interest of the University has been overlooked. The Committee, appointed annually by the President, is composed of 13 members, at least 6 of whom are students and at least 6 faculty members.

Hearing Committee on Student Affairs.—The University Hearing Committee on Student Affairs hears and decides all cases arising under the rules and regulations of the University governing student conduct. It also hears and decides cases arising under the rules and regulations of student governmental bodies and student organizations. Its decisions take the form of advice to the President of the University as to what action may be deemed appropriate in such cases.

The Hearing Committee has appellate jurisdiction in all cases first heard before the Student Assembly or the Interfraternity or Panhellenic councils, with authority to reverse the findings and judicial actions taken by those bodies.

The Hearing Committee has original jurisdiction in those cases in which one or more of the aforementioned bodies is a party to the case, or whenever one of the aforementioned bodies yields its own original jurisdiction. The Committee's original jurisdiction also extends to cases arising under the Human Relations Act and under the regulations adopted by the University for the preservation of academic freedom.

Membership is comprised of 6 students and 6 members of the faculty, all appointed by the President. Meetings are held monthly. Due process is guaranteed in all cases.

ELIGIBILITY FOR STUDENT ACTIVITIES

Any student registered in the University is eligible to participate in nonathletic student activities of the University; however, a student having a scholastic average of less than 2.00 is not eligible to be:

1. A member of the Band, Cheerleaders, Committee on Student Life, Enosinian Debate Society, George Washington University Dance Company, Glee Club, Hearing Committee on Student Affairs, Interfraternity Council, Panhellenic Council, Religious Council, Residence Hall Councils, Student Assembly, or any publications staff;

2. Any officer, permanent committee chairman, or member of the executive board of any activity.

The rules and policies of the Southern Conference govern participation in intercollegiate athletics.

The control and administration of all student activities are outlined in *The Student Handbook*.

SPORTS

The University is a member of the Southern Conference and the National Collegiate Athletic Association. Its teams participate in intercollegiate contests in basketball, baseball, tennis, golf, rifle, soccer, and crew.

The University maintains a complete program of intramural sports for both men and women. The men's program is conducted by the Intramural Council. The Women's Athletic Association and Intersorority Athletic Board cooperate with the Department of Physical Education for Women in conducting the women's intramural and informal extramural sports program in tennis, hockey, basketball, canoeing, rifle, swimming, golf, bowling, and badminton.

PERFORMING ARTS

Students may participate in dance, drama, forensics, music, and radio broadcasting through the following organizations: Enosinian Debating Society; George Washington University Dance Company; Station WRGW; University Chamber Choir, Chorus, Orchestra; and University Players. Each of these groups presents programs during the academic year.

With the cooperation of the Curator of Art, an annual student art exhibit is presented.

ANNUAL EVENTS

Recreation Program.—The Student Assembly and the departments of Physical Education arrange dances, movies, and trips at frequent intervals for all students.

Concert Program.—The Student Assembly sponsors a concert each semester at which nationally known entertainers perform.

Orchestra Series.—The University Orchestra offers a series of concerts throughout the academic year.

University Concert Series.—Offered by the Department of Music throughout the academic year.

Art Exhibits.—The work of locally, nationally, and internationally known artists is shown in monthly exhibits in the Dimock Gallery in Lisner Lounge.

Homecoming.—Scheduled about the middle of the fall semester, Homecoming is the primary festive period of the school year. It includes University theater productions and other activities.

Religion in Life Program.—Special emphasis is given to the place of religion in contemporary society in this program of events during the fall and spring semesters.

Holiday Season.—The University traditionally greets the holiday season with appropriate ceremonies including the lighting of the Christmas tree, the singing of Christmas music, service projects, and the observance of a special Christmas service.

May Day.—This is the traditional time for the award of honors in student activities. Mortar Board and Omicron Delta Kappa announce and present their new members.

STUDENT ORGANIZATIONS

HONOR SOCIETIES

Phi Beta Kappa.—A national honor society recognizing "outstanding intellectual capacity well employed" in the field of liberal arts and sciences. Senior and junior students who are candidates for the degree of Bachelor of Arts or Bachelor of Science in Columbian College and who have shown broad cultural interests, distinguished scholarly achievement, high character, general promise, and scholarly ideals may, to a number not exceeding 15 per cent of a class, be elected to membership by the Faculty members of the Alpha Chapter of the District of Columbia. Seniors and juniors in other schools of the University who meet the above requirements are also eligible for consideration for membership, provided that their program of studies includes appreciable work in the liberal arts.

Sigma Xi.—A national scientific honor society, the purpose of which is to encourage original investigation in science, pure and applied. Outstanding graduate students in the sciences are eligible for full membership, and undergraduates who have shown marked ability in research may be elected to associate membership.

Aesculapian Society.—An honorary premedical fraternity.

Alpha Kappa Delta.—A national sociology society.

Alpha Lambda Delta.—A national fraternity established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman women who attain a scholastic average of at least 3.50.

Delphi.—An intersorority honorary society.

Delta Phi Epsilon.—A foreign service fraternity.

Delta Sigma Rho-Tau Kappa Alpha.—A national forensic society.

Gate and Key.—An intrafraternity honorary society.

Iota Sigma Pi.—A national chemical society for women.

Mortar Board.—A national society for senior college women, stressing leadership, scholarship, and service.

National Collegiate Players (Pi Epsilon Delta).—A national drama honorary fraternity.

Omicron Delta Epsilon.—A national economics society.

Omicron Delta Kappa.—A national fraternity emphasizing leadership in extracurricular activities.

Order of Scarlet.—A service honorary society for sophomore and junior men.

Phi Eta Sigma.—A national fraternity, established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman men who attain a scholarship average of at least 3.50.

Phi Sigma Tau.—A national philosophy honor society.

Pi Mu Epsilon.—A national mathematics honor society.

Psi Chi.—A national psychology fraternity.

Sigma Alpha Eta.—A national speech and hearing fraternity.

Sigma Delta Pi.—A national Spanish honor society.

Sigma Pi Sigma.—A national physics fraternity.

Tassels.—A service honorary society for sophomore women.

PROFESSIONAL ORGANIZATIONS

Alpha Chi Sigma (chemistry), Alpha Kappa Psi (commerce and economics), Association for Hospital Administration, Delta Nu Alpha (national professional transportation fraternity), International Association of Students in Business and Economics, Phi Delta Gamma (graduate), Phi Delta Kappa (education), Pi Lambda Theta (education), Sigma Delta Chi (journalism).

SOCIAL FRATERNITIES

Alpha Epsilon Pi, Delta Tau Delta, Kappa Sigma, Phi Sigma Delta, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Alpha Mu, Sigma Chi, Sigma Nu, Sigma Phi Epsilon, Tau Epsilon Phi, Tau Kappa Epsilon.

SOCIAL SORORITIES

Alpha Epsilon Phi, Chi Omega, Delta Gamma, Delta Phi Epsilon, Kappa Alpha Theta, Kappa Kappa Gamma, Phi Sigma Sigma, Pi Beta Phi, Sigma Delta Tau.

DEPARTMENTAL CLUBS

Anthropology Club, Education Council, Enosinian Debating Society, Geology Club, German Outing Club, Philosophy Club, Russian Language Club, Women's Recreation Association.

RELIGIOUS ORGANIZATIONS

Baptist Student Union, B'nai B'rith Hillel Foundation, Christian Science Organization, Eastern Orthodox Club, Episcopal Student Association, Lutheran Student Association, Newman Foundation, Unitarian-Universalist Club, United Christian Fellowship, Wesley Foundation, and a Religious Council comprised of representatives of all religious organizations.

STUDENT PUBLICATIONS

The Cherry Tree (the yearbook), *The University Hatchet* (semi-weekly newspaper), *The Potomac* (literary magazine), *The Wig* (humor magazine).

OTHER ORGANIZATIONS

Alpha Phi Omega (national service fraternity), Alpha Theta Nu (scholarship winners), Big Sisters, Black Students' Union, Cheerleaders, Colonial Boosters, Foggy Bottom Sports Car Club, Free University, Interfraternity Council, International Students' Society, Intersorority Athletic Board, Junior Panhellenic Association, Model Government Association, Old Men, People-to-People, Residence Hall Councils, Senior Panhellenic Association, SERVE, Station WRGW, Student Assembly, Student Grotto of the National Speleological Society, Students for Better Government, Students for a Democratic Society, University Commuter Association, University Pep Band, Young Democrats Club, Young Republican Club.



COLUMBIAN COLLEGE OF ARTS AND SCIENCES

Dean C.D. Linton

Associate Dean G.M. Koehl

Assistant Deans J.L. Métivier, Jr., R.C. Rutledge, H.E. Yeide, Jr.

FACULTY

Professors J.G. Allee, Jr., Joseph Aschheim, Otto Bergmann, J.W. Brewer, H.F. Bright, R.G. Brown, A.E. Burns, Elizabeth Burtner, W.E. Caldwell, G.V. Carroll, I.H. Cisin, J.H. Coherly, C.W. Cole, Milton Crane, R.H. Davison, Louis De Alessi, V.J. DeAngelis, A.H. Desmond, Julian Eisenstein, C.E. Galbreath, Wood Gray, Andrew Gyorgy, R.G. Hanken, I.B. Hansen, R.C. Haskett, G.F. Henigan, P.H. Highfill, Jr., H.C. Hinton, H.H. Hobbs, Herbert Jehle, R.G. Jones, Norman Kaplan, J.W. Kendrick, Hewitt Kenyon, J.C. King, D.C. Kline, J.L. Knetsch, G.M. Koehl, W.H. Kraus, Solomon Kullback, J.F. Latimer, Thelma Z. Lavine, H.L. LeBlanc, W.K. Legner, L.P. Leite, Sar Levitan (*Research*), B.I. Levy, J.B. Levy, E.J.B. Lewis, H.W. Lilliefors, C.D. Linton, T.P.G. Liverman, Kurt London, W.A. MacDonald, G.L. Mangum (*Research*), G.E. Mazzeo, H.M. Merriman, F.H. Michael, Charles Milton (*Research*), R.H. Moore, Edith Mortensen, J.N. Mosel, S.C. Munson, Gardner Murphy (*Visiting*), C.R. Naeser, David Nelson, Benjamin Nimer, W.A. Oliver, Jr. (*Research*), H.J. Parry (*Research*), T.P. Perros, E.L. Phillips, R.E. Purcell, J.S. Redding, J.P. Reesing, Jr., J.W. Robb, Mario Rodriguez, H.M. Sachar, R.H. Schlagel, W.E. Schmidt, R.P. Sharkey, F.R. Siegel, Henry Solomon, Loretta Stallings, R.W. Stephens, E.L. Stevens, C.T. Stewart, Jr., Rafael Supervia, C.T. Taam, Geza Teleki, R.B. Thompson, B.D. Van Evera, R.C. Vincent, R.D. Walk, R.H. Walker, Jr., D.S. Watson, R.L. Weintraub, E.R. Weismiller, D.G. White, R.K. White, R.E. Wood, S.N. Wrenn, Helen Yakobson, A.J. Zuchelli

Adjunct Professors J.C. Broderick, T.F. Carroll, W.H. Crocker, Edward Ettin, E.G. Kauffman, Elliot Liebow, J.W. Pierce, S.H. Riesenbergl, I.G. Sohn

Associate Professors Fred Abrams, Caroline Adams, Martha Adem, Bette Barton, Lee Bielski, R.R. Bonato (*Research*), L.S. Bowling, Sr., A.D. Britt, J.F. Burks, E.A. Caress, A.E. Claeysens, Jr., A.G. Coates, Mary Ann Coffland, T.F. Courtless, Jr., Linda DePauw, D.S. Douglas, C.F. Elliott, Nicolae Filipescu, Roland Fleischer, J.A. Frey, R.N. Ganz, Jr., Lyndale George, I.I.

Glick, Jacqueline Goodnow, Marvin Gordon, W.B. Griffith, F.S. Grubar, Dagmar Henney, C.J. Herber, P.P. Hill, J.W. Hillis, Mary Holman, Ching-Yao Hsieh, C.T. Ireland, Eva Johnson, W.R. Johnson, R.S. Jordan, Irving Katz, R.W. Kenny, Virginia Kirkbride, A.D. Kirsch, F.C. Kurtz, R.K. Lewis, R.C. Lindholm, W.F.E. Long, W.L. Marsh, G.E. McCandlish, Muriel McClanahan, Ruth McKay, M.L. Meltzer, J.L. Métivier, Jr., P.J. Mika, F.L. Minn, C.C. Mondale, J.A. Morgan, Jr., C.A. Moser, Chei-Min Paik, Kittie Parker, Robert Parris, C.H. Pfuntner, L.B. Platt, Nadine Popluiko-Natov, Francisco Prats, W.M. Reynolds, Charles Rice, R.C. Rutledge, S.O. Schiff, Lois Schwoerer, L.G. Seeger, Chung-wen Shih, R.H. Shumway, D.E. Silber, W.A. Smith, Jeanne Snodgrass, Carl Steiner, George Steiner, R.H. Tanck (*Research*), D.H. Teller, Klaus Thoenelt, L.J. Tilly, W.L. Turner, C.E. Tut-hill, J.D. Vedvik, Dewey Wallace, Jr., R.C. Willson, Maida Withers, Elizabeth Wright, H.E. Yeide, Jr., R.Y.C. Yin

Adjunct Associate Professor C.J. Lange

Assistant Professors Eugene Abravanel, D.T. Allensworth, A.D. Andrews II, Martha Bair, Ruth Bari, B.P. Berube, Dorothy Betz, K.E. Bumgarner, Joan Caton, J.W. Claiborne, Gayle Clapp, G.F. Conner, R.H. Dahl, Gerald Donaldson, Barbara Dunham, R.M. Dunn, Jr., B.C. Field, J.R. Frissora, M.G. Gallagher, H.I. Gates, Kosara Gavrilovic, V.K. Golla, M.D. Green, R.A. Hadley, Lilien Hamilton, Lois Hammer, Suzanne Hammersberg, C.S. Harris, J.M. Harrison, Julia Hicks, A.J. Hiltebeitel, R.W. Holmstrom (*Visiting*), Robert Honeygosky, R.L. Humphrey, Jr., G.P. Huvé, Nancy Johnson, M.A. Kandel, N.K. Khatcheressian, David Kieserman, S.J. Korcheck, Ruth Krul-feld, M.J. Landy, D.L. Lee, Myrna Lee, Patricia Lengermann, J.C. Lowe, Mabel McEwan, Mary McHenry, Mary Miller, Margaret Montzka, Subram-aniam Moryadas, Charles Mudge, Honey Nashman, Elizabeth Neyman, G.A. Olkhovsky, W.C. Parke, Henry Peskin, J.A. Quitslund, Sonya Quits-lund, R.W. Rafuse, Jr., C.B. Reed, Joan Regnell, Bernard Reich, Suzanne Reynolds, J.R. Roman, Jr., D.A. Rowley, W.B. Rucker, L.C. Schaefer, Mykola Stepanenko, Phyllis Stewart, E.A. Stone, Margaret Sullivan, R.E. Thomas, Irene Thompson, Richard Thornton, N.A. Tilkens, J.L. Tropea, G.C.Y. Wang, S.J. Wayne, Lawrence Winkler, J.E. Ziolkowski

Adjunct Assistant Professors S.A. Hoenack, J.K. Kern, Mary Norton

Instructors D.M. Atwood, Carolyn Baldwin, Margaret Bonney, Diana Bronte, Nancy Bunge, Catherine Cook, Mohammad Fatemi, N.C. Garner, F.O. Griffith, Melvyn Hammarberg, T.E. Harris, Estelle Irizarry, D.R. Lehman, Evelyn Lynch, Diane Majerus, James McPherson, Fredrica Rosenberg, Pas-tora San Juan, K.L. Storrs, Mary Walden, F.L. Walser, Diane Weber, Judith Young, Thomas Zaucha

COMMITTEES*

Lower Division

THE DEAN'S COUNCIL†

1969: D.S. Douglas, D.E. Silber
1970: A.D. Andrews II, W.L. Turner
1971: Dorothy Betz, Muriel McClanahan

* The Dean of Columbian College of Arts and Sciences is an ex officio member of all committees.
† Elected by the Faculty.

COMMITTEE ON ADMISSION AND ADVANCED STANDING

G.M. Koehl (*Chairman*), A.D. Kirsch, E.J.B. Lewis, T.P. Perros, R.C. Rutledge, Lawrence Winkler

COMMITTEE ON SCHOLARSHIP

H.E. Yeide Jr., (*Chairman*), Barbara Dunham, R.G. Hanken, G.E. Mazzeo, R.C. Rutledge, S.O. Schiff, R.C. Vincent

COMMITTEE ON HONORS PROGRAM

H.E. Yeide, Jr. (*Chairman*), W.B. Griffith, J.A. Morgan, Jr., J.P. Reesing, Jr., S.O. Schiff, R.B. Thompson. *Student Representatives*: Richard Epstein, Elizabeth Fox, Felix Wysocki

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Upper Division

THE DEAN'S COUNCIL*

1969: J.F. Burks, Thelma Z. Lavine
1970: A.D. Kirsch, H.M. Sachar
1971: Joseph Aschheim, H.H. Hobbs

COMMITTEE ON ADMISSION AND ADVANCED STANDING

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COMMITTEE ON THE USE OF CORRECT ENGLISH

R.M. Moore (*Chairman*), J.G. Allee, Jr., G.F. Henigan, Muriel McClanahan, R.C. Willson

COMMITTEE ON SCHOLARSHIP

W.F.E. Long (*Chairman*), J.A. Frey, H.M. Merriman, R.E. Purcell, S.N. Wrenn

COMMITTEE ON STUDIES

C.D. Linton (*Chairman*), A.H. Desmond, P.H. Highfill, Jr., H.L. LeBlanc, W.E. Schmidt

Elected by the Faculty.

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Windsor P. Booth, Chief of the News Service, National Geographic Society

Waldron Faulkner, Faulkner, Stenhouse, Fryer & Faulkner, Washington, D.C.

David Edward Finley (*Retired Director of the National Gallery of Art*), Washington, D.C.

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John Palmer Reesing, Jr., Professor of English Literature

Sidney Dillon Ripley II (*University Trustee*), Secretary, Smithsonian Institution

Julian H. Singman, Attorney, Washington, D.C.

Sidney William Souers, Rear Admiral, USNR (Ret.) (*University Honorary Trustee*), Chairman of the Board, General American Life Insurance Company, St. Louis, Mo.

Ira Rockwood Telford, Professor of Anatomy

Louis B. Wright, formerly Director, Folger Shakespeare Library

INTRODUCTION

Since its founding in 1821, Columbian College of Arts and Sciences, the liberal arts college of the University, has continued to expand and develop with the city of Washington. Its central situation makes participation in the life of the Nation's Capital convenient for resident students. The cosmopolitan nature of the student body reflects the atmosphere of a great world capital. Because the students come from the fifty states and from eighty foreign countries, class discussions and casual student conversations are enriched by a challenging variety of viewpoints.

Columbian College offers programs leading to the degrees of Bachelor of Arts, Bachelor of Science, and Bachelor of Science in Medical Technology; prelegal and premedical programs; the first two years of the professional programs in Education, in Government and Business Administration, and in Public and International Affairs; and a terminal curriculum in Accounting which may be completed within two to three years.

* This Council serves both Columbian College of Arts and Sciences and the Graduate School of Arts and Sciences. The President of the University, the Vice President for Academic Affairs, the Dean of Columbian College of Arts and Sciences, and the Dean of the Graduate School of Arts and Sciences are ex officio members of the Council.

All entering freshmen and transfer students of less than junior class standing, except those in the fields of engineering and applied science, enter the lower division of Columbian College. The division is primarily concerned with providing (1) the personal and academic guidance needed in adjusting to college life and in selecting and preparing for a major field and (2) the broad cultural foundations in language and literature, science, and social studies on which major-field specialization in the upper division is built.

During the junior and senior years the student is in the upper division, where he is guided by his major adviser. A student who plans to continue toward a Master's degree should plan his Bachelor's program so that it will prepare him for the graduate work of his interest.

Columbian College has degree-granting authority over the off-campus programs leading to the degrees of Bachelor of General Studies (areas of concentration in history, mathematics, political science, and psychology), Bachelor of Science in Environmental Health, Bachelor of Science in Geodetic and Cartographic Science, and Bachelor of Science in Oceanography.

These off-campus degree programs are administered by the College of General Studies.

THE COLUMBIAN COLLEGE PROGRAM

The Columbian College program is a contemporary application of the historic liberal arts tradition. Its purpose is to enable the student to develop both his particular abilities and his general awareness as a human being. It demands of the student a thorough acquaintance with one major area of learning and at the same time an understanding of how that specialization fits into the larger context of the scientific, social, and moral problems which confront modern man. It stresses not merely expertness but that broadly enlightened expertness which encourages its graduates to grow through the years in ability and wisdom.

SOPHOMORE YEAR IN PARIS PROGRAM

Freshmen whose average at the end of the first semester is 2.50 or better may be eligible to participate in the George Washington University-American College in Paris Sophomore Year in Paris Program. Qualified students will be encouraged to accept this opportunity to profit from the cultural and intellectual riches of Europe by spending their second year living and studying in Paris. Credits earned in this Program will be transferrable toward a degree in Columbian College of Arts and Sciences. Since all courses are taught in English, a knowledge of French is not mandatory, but is desirable. Students with no training in the French language will be required to participate in an intensive five-week language program in Paris prior to the beginning of the academic year. (For "Language Study in Paris," see the 1969 *Summer Sessions Catalogue*.)

ENTRANCE REQUIREMENTS

Good character and an academic background appropriate for the program of studies contemplated are required.

LOWER DIVISION

Requirements for admission to the freshman class are as follows:

1. An acceptable certificate of graduation from an accredited secondary school, showing at least fifteen units* which must include four years of English; at least two years of one foreign language; two years of science, preferably with laboratory instruction; two years of social studies, one of which must be American history; and two years of college preparatory mathematics. One unit of algebra, or the equivalent, is prerequisite to courses in chemistry and statistics; and one unit in algebra and one unit in plane geometry, or the equivalent, are prerequisite to courses in mathematics and physics.

2. The principal's statement that the applicant is prepared to undertake college work.

3. College Entrance Examination Board scores must be submitted on the Scholastic Aptitude Test and the English Composition Achievement Test.

It is recommended that the examinations be taken in December or January. Scores on tests taken in the junior year may be submitted. Arrangements for tests are the responsibility of the applicant and should be made with the Educational Testing Service, 20 Nassau Street, Princeton, N.J. 08540; or 1947 Center Street, Berkeley, Calif. 94704, not less than one month before the date of the test. In applying for the test, the applicant should specify that the scores be sent to the Office of Admissions, George Washington University, Washington, D.C. 20006.

The Committee on Admission and Advanced Standing will consider the adequacy of the qualifications of an applicant who, because of unusual circumstances, does not present all of the formal requirements stated above. The Committee may prescribe appropriate scholastic-aptitude tests of the University.

UPPER DIVISION

A quality-point index of 2.00 or higher in the work of the freshman and sophomore years is required for admission to degree candidacy in the upper division.

Bachelor of Arts.—Sixty-four hours of academic work based on the *Arts and Letters* curriculum in the lower division, or the equivalent.

Bachelor of Science.—Sixty-four hours of academic work based on the *Science* curriculum in the lower division, or the equivalent.

Bachelor of Science in Medical Technology.—Sixty-four hours of academic work including Biological Sciences 11-12; Chemistry 11-12, 22, and 50.

REGULATIONS

Regulations regarding ADMISSION, REGISTRATION, FEES AND FINANCES are stated on pages 23-33; other University regulations, on pages 43-50.

ACADEMIC WORK LOAD

A full-time student not on probation may take ordinarily not more than 17 semester hours. A student employed more than 20 hours a week who is not on probation may take not more than 10 hours.

* A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods, or the equivalent, of prepared classroom work.

The amount of work taken by a student on probation is limited by the Committee on Scholarship.

A full-time student whose quality-point index is 3.50 or higher may take not more than 19 hours. An employed student who meets the same standard may take not more than 12 hours.

A student who accepts employment after registration or at any time during a semester must report that fact immediately to the Dean so that his program may be adjusted, if necessary.

ATTENDANCE

The student is held responsible for all the work of the course in which he is registered, and all absences must be excused by the instructor in charge before provision is made for the student to make up work missed. Excessive absence in any course will lead to loss of credit in that course, even though other requirements, such as tests, term papers, and examinations, are met.

A student whose absences from any class, whether excused or unexcused, are in excess of one-fourth of the total number of class periods will receive the grade of *F* for the course, except by special ruling of the Dean's Council on recommendation of the instructor.

USE OF CORRECT ENGLISH

The use of correct English, oral and written, is required in all courses. Any student whose English in any course whatever is deemed unsatisfactory may be reported by the instructor to the Dean and to the Committee on the Use of Correct English. The Chairman of the Committee may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed by failure to make up any such deficiency in English to the satisfaction of the Committee and the Dean.

HONORS

Lower Division Honors Program.—Columbian College offers an honors program for selected freshmen and sophomores. The program is designed to provide an appropriate challenge and opportunity for gifted students; to permit early identification of students with the highest potential for high-quality graduate work and success in competitive award programs; to introduce educational innovations which may possibly be applied at a later date to the student body at large; to bring together a group of students whose activities will enable them to contribute more significantly to academic discussion within the University as a whole; and to involve superior students in a program unmistakably identified with the liberal arts ideal of the generally educated man, thus balancing the emphasis on concentrated study that is the heart of existing departmental honors programs.

The program consists of 3 honors seminars, one freshman and two sophomore (see pages 293–94), each limited to approximately 15 students. Each seminar carries 3 semester hours of credit, and represents elective hours in the student's program. Directors of the seminars invite expert faculty members from different fields to assist in discussion of particular problems.

Students are selected for the Honors Program from the entering freshman class each fall, and register for the first of the seminars in the Spring Semester. These students may remain in the Program as long as they maintain an overall 3.20 quality-point index. As places become vacant in the Program as a result of voluntary or involuntary withdrawal, students whose quality-point index is 3.20 or above but who were not included in the original honors group may be selected to fill vacancies.

The honors seminars will be graded on an "honors/no credit" basis. Successful participation in two of the three honors seminars will qualify a student to have the designation "honors in the lower division" entered into his permanent record.

Lower Division Honor Roll.—The name of every lower division student who has a quality-point index of 3.50 or higher on the basis of his complete record at this University is placed on the honor roll. To be eligible, the student must have completed no less than 15 semester hours. (A place on the honor roll does not necessarily mean that the student will receive honors upon graduation.)

Dean's List.—The name of every student who has a quality-point index of 3.50 or higher on a minimum of 15 semester hours of work taken in any one semester is placed on the Dean's List for that semester.

CREDIT/NO CREDIT OPTION (see pages 44-45)

PROBATION

The student must maintain a quality-point index of at least 2.00 or be placed on probation. He remains on probation as long as his index is below 2.00. The student whose average is 2.00 or below for work undertaken during this probationary period is suspended. The student whose over-all quality-point index is still below 2.00 but whose average for work undertaken during the probationary period is above 2.00 may be continued on probation by the Committee on Scholarship.

SUSPENSION

The student whose index falls below 1.50 is suspended. A student who fails to remove probation after two semesters, whether successive or after an interval, is also suspended.

A student suspended for poor scholarship may apply for readmission after the lapse of either the fall or the spring semester. He must then submit evidence to the Committee on Admission and Advanced Standing that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

Mid-semester Warning.—At the end of the seventh week of each semester, instructors file in the Office of the Dean the names of freshman and sophomore students who are doing work of *D* grade or lower. A notice of Warning is sent to the student and a copy filed with the appropriate adviser. A "warning" constitutes notice to the student that he must consult his instructor and adviser at the earliest opportunity.

The foregoing scholarship rules are applied to a student with a limited schedule only when he has undertaken a minimum of 12 semester hours.

CORRESPONDENCE AND HOME-STUDY COURSES

No credit is given for work done by correspondence or in home-study courses.

CLASSIFICATION OF STUDENTS

A *freshman* is a student who is in the process of completing 32 semester hours, including 18 hours of his curriculum requirements.

A *sophomore* is a student who has completed between 32 and 64 semester hours, including 18 hours of his curriculum requirements.

A *junior* is a student who has completed between 64 and 94 semester hours and filed the declaration of his major, approved by his adviser, in the Office of the Dean.

A *senior* is a student who has completed between 94 and 124 semester hours, including at least 6 hours of second-group course work in his major.

The Lower Division

A STUDENT IN THE LOWER DIVISION is given the opportunity of taking a wide range of liberal arts subjects—humanities, foreign languages, sciences, social studies—both as a means of laying the groundwork for the more concentrated major-field study in the upper division and as a means of determining what academic area is best adapted to his interests and aptitudes. In order to insure that these general educational requirements are met, the student is not permitted to anticipate major-field special courses until all basic areas are covered.

ENTRANCE REQUIREMENTS

Entrance requirements of the lower division are stated on pages 69–70.

ADVISORY SYSTEM

Each student in the lower division is provided with two kinds of counseling. *Academic* advising is performed by members of the Faculty selected for their knowledge of freshman-sophomore requirements and programs, and each student makes up his program in consultation with the adviser assigned to him before registration. *Personal* counseling is available through the offices of the Associate Deans of Students. All students are encouraged to maintain close contact with their Faculty advisers.

Students who intend to transfer after the sophomore year to the School of Education, the School of Government and Business Administration, or the School of Public and International Affairs are assigned special advisers to assist them in planning their programs.

An academic warning system permits early attention to students whose work falls below required standards. In such cases, students are required to consult regularly with their advisers. On request, copies of academic warnings or probation notices may be sent to parents or guardians, who are themselves welcome to meet with members of the advisory staff.

REQUIRED PLACEMENT EXAMINATIONS

English.—Students whose College Board English Composition Achievement Test scores suggest inadequate preparation may be assigned to English 1x or may be tested in vocabulary, spelling, grammar, standard usage, and writing skill, before placement in either English 1x or 1. Students whose scores indicate marked superiority will be allowed to waive the English 1 requirement.

Foreign Languages.—A standardized placement examination is required of all entering students who wish to continue in college the language begun in high school (Chinese, French, German, Italian, Russian, or Spanish). Upon completion of the examination, assignment is made to the appropriate course.

FIRST- AND SECOND-GROUP COURSES

A freshman or sophomore may take second-group courses (courses numbered 101–200) only with the written permission of the instructor and of the Dean.* A student is not permitted to postpone a required first-group course to take a second-group course for elective credit. The principle that first-group courses must be taken in the freshman and sophomore years, and advanced courses in the junior and senior years, is rigidly adhered to in approving student programs. Freshmen and sophomores on probation may take second-group courses only with the written permission of the Committee on Scholarship.

PROFESSIONAL COURSES

Except for students intending to apply for the combined degrees of Bachelor of Arts and Doctor of Medicine or the degree of Bachelor of Science in Medical Technology, not more than 12 hours of professional courses, i.e., courses offered in units of the University other than Columbian College, may be included in the 124 hours required for the Bachelor's degrees in Columbian College. Students electing professional courses under this rule must obtain the approval of the Dean before registration.

PHYSICAL EDUCATION REQUIREMENT

Freshmen and sophomores (except those enrolled in the Physical Education curricula) are required to take four semesters of physical education (Physical Education 5 or 6) unless they are registered for less than 9 semester hours or unless regular employment during the day makes it necessary to take all classes during the evening hours.

Any other exemptions will be granted only upon written petition which has been recommended by the Physical Education department concerned and approved by the Dean. Students exempt from the physical education requirement must substitute four hours of elective.

The required medical and physical examinations, as specified by the departments of Physical Education, will be arranged at the beginning of each semester for those students who lack reports.

* Students enrolled in the terminal curriculum in Accounting may take those second-group courses which are specified as part of their curriculum without obtaining the written permission of the instructor or the Dean.

FOREIGN LANGUAGE REQUIREMENT

In curricula requiring foreign languages a student must complete satisfactorily the equivalent of two years of college work in a single foreign language. (Chinese*, French, German, Greek†, Italian, Latin†, Russian, Spanish).

A student offering for admission four acceptable high school units of a single foreign language, or the equivalent, is not required to take any foreign language.

A student who offers less than four units and wishes to meet the requirement by continuing in the same language must take the language placement test.

In general, one year of high school language is considered equivalent to one semester of college language.

In some instances foreign languages are required or recommended as preparation for advanced work. The student should consult his adviser so that appropriate foreign languages may be included, when necessary, in his lower division program.

ENGLISH REQUIREMENT

Entering students registered in the arts and sciences curricula must follow the sequence of English 1 or 1x, both halves of one of the introductory literature courses, and English 40. This does not apply to students transferring to these curricula or students registering in the preprofessional or terminal curricula.

EXAMINATIONS FOR WAIVING CURRICULUM REQUIREMENTS‡

A required course may be waived and admission to an advanced course granted by the passing of a waiver examination. Passing this examination does not entitle the student to any hours of credit. Written request to take the examination should be made to the Dean and the required fee paid at the Office of the Cashier before taking the examination.

TRANSFER FROM LOWER DIVISION TO UPPER DIVISION

On completion of a lower division curriculum of 64 or more semester hours with a quality-point index of 2.00 or higher, the student must apply in the Office of the Dean for transfer to the upper division.

LOWER DIVISION CURRICULA

Each of the following curricula comprises the first two years of a standard four-year college course.

All curricula in this group may be applied toward the degree of Associate in Arts. Students wishing to receive this degree must apply at the Registrar's Office at the time of registration for the fourth or last semester. The last 15 semester hours must be spent in residence in Columbian College.

* Chinese 5-6 is required of Chinese Studies majors.

† Greek and Latin not acceptable for International Affairs and Public Affairs majors.

‡ This provision does not apply to the premedical student, all of whose required premedical work must be taken in a recognized college of arts and sciences.

IN PREPARATION FOR THE UPPER DIVISION OF COLUMBIAN COLLEGE:

Arts and Letters

First two years of the Bachelor of Arts curriculum:

| | Semester Hours |
|--|-------------------|
| Comp & Lit: English 1 or 1x; 51-52, 71-72, 91-92, Classics 71-72, French 51-52, German 51-52, Italian 51-52, Slavic 91-92, or Spanish 51-52; English 40..... | 12 |
| *Foreign Lang: | 12 |
| †PE: | 4 |
| Science: Biological Sciences 3-4, 11-12; Chemistry 3-4, 11-12; Geology 1-2; or Physics 1, 2 (or 1 and 30 for prephysics majors), 9-10 | 6-8 |
| Social Studies: Anthropology 1-2; Economics 1-2; Geography 51, 52; History 39-40, 71-72; Political Science 5-6; or Sociology 1-2 | 6 |
| †Elective: | 22-24 |
| Total | 64 |

Science

First two years of the Bachelor of Science curriculum:

| | |
|--|-------|
| Comp & Lit: English 1 or 1x; 51-52, 71-72, 91-92, Classics 71-72, French 51-52, German 51-52, Italian 51-52, Slavic 91-92, or Spanish 51-52; English 40..... | 12 |
| Foreign Lang: French, German, Russian, or nonscience elective..... | 12 |
| NOTE.—A reading knowledge of French, German, or Russian is required. This may be satisfied by French 4 or 6, German 4, or Russian 4 or 6, or by special examination. | |
| Math: Mathematics 3, 6, or electives..... | 6 |
| NOTE.—The Mathematics 3 requirement may be satisfied by offering two years of high school algebra acceptable for admission; the Mathematics 6 requirement may be satisfied by offering one-half year of high school trigonometry acceptable for admission. | |
| †PE: | 4 |
| Science: Biological Sciences 11-12..... | 8 |
| Two additional full-year courses are required, to be chosen from Chemistry 11-12, Geology 1-2, and Physics 1, 2 (or 1 and 30 for prephysics majors)..... | 14-16 |
| Social Studies: Anthropology 1-2; Economics 1-2; Geography 51, 52; History 39-40, 71-72; Political Science 5-6; or Sociology 1-2..... | 6 |
| †Elective: | 0-2 |
| Total..... | 64 |

* See page 75 for foreign language requirement.

† See page 74 for physical education requirement.

‡ It is suggested that electives include one of the following courses: Art 31-32, 71-72; Music 3, 4; Philosophy 51-52; Religion 9, 10, 21, 59-60.

The student should obtain the advice of his major department as to proper prerequisite and collateral courses for the intended major.

Credit may be given for a limited number of courses elected in Physical Education, with the approval of the Dean.

Premedical

Premedical students may follow either the Arts and Letters or the Science curriculum above in fulfilling the first 64 semester hours of the premedical requirement. Each premedical program must be approved by the premedical adviser. For admission to most medical schools, a minimum of 90* semester hours applicable toward a degree in an approved college of arts and sciences must include the following:

1. **Biology:** 8 semester hours. This may be either in general biology or zoology but may *not* include separately credited courses in botany.

2. **Chemistry:** 8 semester hours of general inorganic chemistry (which may include qualitative analysis), including 4 semester hours of laboratory; and 6 to 8 semester hours of organic chemistry, including laboratory.

3. **Physics:** 8 semester hours, including at least 2 semester hours of laboratory.

4. **English:** 6 semester hours in composition and literature. This may be the usual introductory college course or its equivalent.

While not required for admission, courses in embryology, histology, genetics, and mathematics are strongly recommended.

With the exception of these specific requirements applicants are urged to follow their personal interests in developing their premedical courses of study. A well-balanced program, rather than a specific field, is the criterion by which an applicant is judged. It is not advisable to take courses that appear to cover subject matter in the medical program.

While well-qualified candidates are eligible for admission after completing the minimum 90 semester-hour requirement, the majority of applicants are found to be better prepared for the study of medicine after four years of college work.

Medical Technology

First two years of the Bachelor of Science in Medical Technology curriculum. See pages 85-86 for a description of the program and the requirements for the junior and senior years:

| | Semester Hours |
|--|-------------------|
| Comp & Lit: English 1 or 1x; 51-52, 71-72, 91-92, Classics 71-72, French 51-52, German 51-52, Italian 51-52, Slavic 91-92, or Spanish 51-52; English 40..... | 12 |
| Foreign Lang: French, German, Russian, or nonscience elective..... | 12 |
| NOTE.—A reading knowledge of French, German, or Russian is required. This may be satisfied by French 4 or 6, German 4, or Russian 4 or 6, or by special examination. | |
| Math: Mathematics 3, 6, or electives..... | 6 |
| NOTE.—The Mathematics 3 requirement may be satisfied by offering two years of high school algebra acceptable for admission; the Mathematics 6 requirement may be satisfied by offering one-half year of high school trigonometry acceptable for admission. | |
| †PE: | 4 |
| Science: Biological Sciences 11-12..... | 8 |
| Chemistry 11-12, 22, 50..... | 16 |

* The 4 semester hours of physical education required at George Washington University are not applicable toward admission to Medical School.
 † See page 74 for physical education requirement.

| | Semester Hours |
|--|-------------------|
| Social Studies: Anthropology, 1-2; Economics 1-2; Geography 51, 52; History 39-40, 71-72; Political Science 5-6; or Sociol- ogy 1-2..... | 6 |
| *Elective: May be selected in lieu of the various exemptions. | |
| Total..... | 64 |

IN PREPARATION FOR THE SCHOOL OF EDUCATION

Education

First two years of the Bachelor of Arts in Education curriculum of the School of Education:

| | Semester Hours |
|---|-------------------|
| Engl: Composition 1 or 1x, 2..... | 6 |
| Literature 51-52, 71-72, or 91-92..... | 6 |
| Foreign Lang: Chinese, French, German, Italian, Latin, Russian, or Span- ish. See page 75 for foreign language requirement..... | 12 |
| Math: Two semesters to supplement senior high school courses, chosen from Mathematics 3, 6, 9, 10..... | 6 |
| †PE: | 4 |
| Psyc: Psychology 1, 22..... | 6 |
| Science: Three semesters (two in biological science and one in physical science or vice versa) to supplement senior high school courses in those fields and chosen from Biological Sciences 3-4, 11-12; Chemistry 3-4, 11-12; Geology 1-2; or Physics 1, 2 (or 1 and 30 for students electing Physics as a teaching field), 9-10. A Secondary Education Major offering for admission two or more acceptable senior high school units in the above areas of science may be ex- empted from one semester of this requirement..... | 10-12 |
| Social Studies: History 71-72 or Political Science 5-6..... | 6 |
| Anthropology 1-2; Economics 1-2; Geography 51, 52; History 39-40, 71-72; Political Science 5-6; or Sociol- ogy 1-2..... | 6 |
| Sp&D: Speech and Drama 1 (or 11, if the Department so advises)... | 3 |
| Elective: May be selected in lieu of the various exemptions. | |
| Total..... | 65-67 |

Physical Education for Men

First two years of the Bachelor of Science in Physical Education curriculum of the School of Education:

| | Semester Hours |
|---|-------------------|
| Engl: English 1 or 1x, 2..... | 6 |
| PE: Physical Education 41, 45, 46, 49, 50, 59-60..... | 20 |
| Psyc: Psychology 1, 22..... | 6 |
| Science: Biological Sciences 3-4, Chemistry 3-4..... | 14 |

• It is suggested that electives include one of the following courses: Art 31-32, 71-72; Music 3, 4; Philosophy 51-52; Religion 9, 10, 21, 59-60.

† See page 74 for physical education requirement.

| | Semester Hours |
|--|-------------------|
| Social Studies: Anthropology 1-2 or Sociology 1-2..... | 6 |
| History | 6 |
| Elective: | 6 |
| Total..... | 64 |

Physical Education for Women

First two years of the Bachelor of Science in Physical Education curriculum of the School of Education:

| | Semester Hours |
|---|-------------------|
| Engl: Composition 1 or 1x, 2..... | 6 |
| Literature 51-52, 71-72, or 91-92..... | 6 |
| PE: Physical Education 43-44..... | 6 |
| Physical Education 49, 50..... | 6 |
| Physical Education 51-52..... | 6 |
| Psyc: Psychology 1, 22..... | 6 |
| Science: Biological Sciences 3-4; Chemistry 3-4..... | 14 |
| Social Studies: Anthropology 1-2; History 39-40, 71-72; Political Science 5-6; or Sociology 1-2..... | 6 |
| Elective: | 8 |
| Total..... | 64 |

**IN PREPARATION FOR THE SCHOOL OF GOVERNMENT
AND BUSINESS ADMINISTRATION****Accounting, Business Administration, and International Business**

First two years of the Bachelor of Business Administration curricula in Accounting, Business Administration, and International Business:

| | Semester Hours |
|--|-------------------|
| Acct: Accounting 1-2..... | 6 |
| B Ad: Business Administration 51..... | 3 |
| Comp: English 1 or 1x, 2..... | 6 |
| *Lang or Lit: Chinese 3-4; English 51-52, 71-72, 91-92; French 3-4 or 6, or 51-52; German 3-4 or 51-52; Italian 3-4 or 51-52; Slavic 3-4 or 5 and 6, or 91-92; Spanish 3-4 or 6, or 51-52 | 6 |
| Math: Mathematics 30, 31..... | 6 |
| †PE: | 6 |
| Science: Biological Sciences 3-4, 11-12; Chemistry 3-4, 11-12; Geology 1-2; or Physics 1, 2, 9-10..... | 6-8 |
| Social Studies: Economics 1-2, Political Science 5-6, Psychology 1..... | 15 |
| Anthropology 1, Sociology 1, or Psychology 8..... | 3 |
| Stat: Statistics 51..... | 3 |
| ‡Elective: (Speech is recommended; students interested in Interna- tional Business include Geography 52)..... | 4-6 |
| Total..... | 64 |

* This requirement is waived for students who offer 4 years of acceptable high school work in a single foreign language.

† See page 74 for physical education requirement.

‡ Credit is not given for courses elected in Physical Education.

Business and Economic Statistics

First two years of the Bachelor of Business Administration curriculum in Business and Economic Statistics:

| | Semester Hours |
|------------------------------------|-------------------|
| Acct: Accounting 1-2..... | 6 |
| Econ: Economics 1-2..... | 6 |
| Engl: English 1 or 1x, 2..... | 6 |
| *Foreign Lang: | 12 |
| Math: Mathematics 30, 31, 32..... | 9 |
| †PE: | 4 |
| P Sc: Political Science 5-6, or | |
| Phil: Philosophy 51-52..... | 6 |
| Stat: Statistics 51 or 91, 52..... | 6 |
| ‡Elective: | 9 |
| Total..... | 64 |

IN PREPARATION FOR THE SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS:**Chinese Studies and International Affairs**

First two years of the Bachelor of Arts curriculum in Chinese Studies and International Affairs:

| | Semester Hours |
|---|-------------------|
| Engl: Composition 1 or 1x, 2..... | 6 |
| Literature 51-52, 71-72..... | 6 |
| *Foreign Lang: | 12 |
| Geog: Geography 52..... | 3 |
| §Math, Science: Biological Sciences 3-4, 11-12; Chemistry 3-4; Geology 1-2; Mathematics 3, 6; Physics 1, 2, 9-10; or Statistics 51, 52..... | 6-8 |
| †PE: | 4 |
| Social Studies: Economics 1-2; History 40, 71-72; Political Science 5-6.. | 21 |
| ‡Elective: To satisfy minimum required credits..... | 4-6 |
| Total..... | 64 |

Public Affairs

First two years of the Bachelor of Arts curriculum in Public Affairs:

| | Semester Hours |
|-------------------------------|-------------------|
| Engl: English 1 or 1x, 2..... | 6 |
| *Foreign Lang: | 12 |

* See page 75 for foreign language requirement.

† See page 74 for physical education requirement.

‡ Credit is not given for courses elected in Physical Education.

§ This requirement may be satisfied by 6 hours of Mathematics, by 3 hours of Mathematics plus Statistics 51, or by 6 to 8 hours of science.

| | Semester Hours |
|--|-------------------|
| Math, Science: Biological Sciences 3-4, 11-12; Chemistry 3-4; Geology 1-2; Mathematics 3, 6; Physics 1, 2, 9-10; or Statistics 51, 52..... | 6-8 |
| *PE: | 4 |
| Social Studies: Economics 1-2; History 39-40, 71-72; Political Science 5-6 | 24 |
| †Elective: To satisfy minimum required credits..... | 10-12 |
| Total..... | 64 |

TERMINAL CURRICULUM

The following terminal curriculum leads to the degree of Associate in Arts. Although the 64 semester hours required in this curriculum are equivalent to 4 academic semesters of full-time study, prerequisites in Accounting make a longer period of study necessary for most students. Students in this curriculum must spend the last 15 hours in residence in Columbian College:

Accounting

| | Semester Hours |
|---|-------------------|
| Acct: Accounting 1-2, 101, 111, 121-22, 161, 171, 181, 191, 193 | 33 |
| B Ad: Business Administration 131, 161, 162..... | 9 |
| Econ: Economics 1-2..... | 6 |
| Engl: English 1 or 1x, 2..... | 6 |
| *PE: | 4 |
| †Elective: To be selected with the approval of the adviser..... | 6 |
| Total..... | 64 |

Upper Division

A STUDENT working toward a Bachelor's degree in the arts or sciences who has 64 or more acceptable semester hours, whether earned in this University or transferred from another institution, is registered in the upper division of Columbian College. (For transfer from lower division to upper division, see page 75.) It is assumed that he has met the requirements of the low division *Arts and Letters* or *Science* curriculum. If he has not, he must begin to make up his deficiencies immediately upon admission and continue to carry courses to this end until all requirements are met.

THE BACHELOR'S DEGREES

Columbian College offers programs leading to the degrees of Bachelor of Arts, Bachelor of Science, and Bachelor of Science in Medical Technology.

In cooperation with the School of Medicine a seven-year curriculum leading to the combined degrees of Bachelor of Arts and Doctor of Medicine is offered.

* See page 74 for physical education requirement.

† Credit is not given for courses elected in Physical Education.

REQUIREMENTS FOR THE DEGREES

RESIDENCE

A minimum of 30 semester hours, including at least 12 hours in the major field, must be completed in residence in the upper division of Columbian College. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior year must be completed in residence.

For the regulation governing students who are absent from the University for one semester or more, see "Continuous Registration," page 47.

CURRICULUM REQUIREMENTS

At least 60 semester hours beyond those of the appropriate lower division curriculum and the satisfactory completion of the major are required. Each program must be approved by the major adviser and by the Dean.

At least 24 of the last 60 hours must be taken in subjects not included in the major field or department. The student should consult his major adviser at each registration concerning his choice of electives.

Except for premedical and medical technology students, not more than 12 hours of professional courses (i.e., courses offered in units of the University other than Columbian College) may be included. The election of professional courses must be approved by the Dean's Council prior to registration. Ordinarily courses in Physical Education and technical courses in Education will not be approved toward a degree.

A change in degree candidacy (e.g., from Bachelor of Arts to Bachelor of Science) requires the permission of the Dean. The degree requirements effective at the time the change is approved must be met.

Each student must select and file with the Dean a choice of major upon entering the upper division. He may change the major only with the consent of the Dean and of the department or committee concerned, and must meet the requirements for the new major in effect at the time the change is approved.

First-group courses may be required as prerequisites to the major, but because of their introductory character they may not be counted as part of such programs. (See "Explanation of Course Numbers," page 179.)

Students transferring from other institutions or from other schools, colleges, or divisions in this University, with major requirements wholly or substantially met, must complete satisfactorily at least 12 semester hours of approved work in the major field in the upper division of Columbian College. This work will count as part of the minimum residence requirement.

Examination for Waiving Curriculum Requirements.—A required course may be waived and admission to an advanced course granted by passing of a waiver examination. Passing this examination does not entitle the student to any hours of credit. Written request to take the examination should be made to the Dean and the required fee paid at the Office of the Cashier (see page 30) before taking the examination.

INDEPENDENT STUDY PLAN

A junior or senior of demonstrated capacity, with a special interest in the subject matter of a regularly listed course, may be permitted to undertake independent study *in residence* under the personal direction of the instructor, in accordance with the rules of the appropriate department and with the approval of the Dean. Credit under this plan is limited to the specific semester hours of credit designated for each course in the list of courses of instruction. It assumes frequent and regular conferences between the student and the instructor.

BACHELOR OF ARTS

The work of the junior and senior years, including a major in one of the following fields, must be approved by the major adviser and by the Dean.

American Civilization
 Anthropology
 Applied Statistics
 Art History and Theory
 Biology
 Botany
 Chemistry
 Classical Archeology and Greek
 Dramatic Art
 Economics
 Fine Arts
 French Language and Literature
 Geography
 Geology
 Germanic Languages and Literatures
 History
 Journalism
 Latin
 Latin American Studies

Literature:
 English
 American
 Mathematical Statistics
 Mathematics
 Music:
 Applied Music
 Music History and Literature
 Music Theory
 Philosophy
 Physics
 Political Science
 Psychology
 Religion
 Russian Language and Literature
 Sociology
 Spanish American Literature
 Spanish Language and Literature
 Speech
 Speech Pathology and Audiology
 Zoology

COMBINED DEGREES OF BACHELOR OF ARTS AND DOCTOR OF MEDICINE

A candidate for the combined degrees of Bachelor of Arts and Doctor of Medicine must: (1) complete the Medical School entrance requirements; (2) fulfill the Arts and Letters curriculum of the lower division requirements (see page 76); (3) accumulate 94 semester hours in the liberal arts, including a minimum of 30 in the upper division of Columbian College; (4) obtain the approval of the Dean of Columbian College at the time of entering the School of Medicine; (5) obtain the recommendation of the Dean of the School of Medicine at the completion of all prescribed courses in the first year of the School of Medicine, at which time the degree of Bachelor of Arts will be conferred (professional work taken at another institution will not satisfy the major requirement for the combined degrees); (6) maintain throughout the entire course the scholarship level required for graduation.

BACHELOR OF SCIENCE

The work of the junior and senior years, including a major in one of the following sciences, must be approved by the major department and by the Dean.

Biological Sciences

Biology
Botany
Zoology

Physical Sciences

Applied Statistics
Chemistry
Geology
Mathematical Statistics
Mathematics
Physics

THE UNDERGRADUATE MAJOR

There are two types of undergraduate majors: the field-of-study major and the departmental major. Two majors, Latin American Studies and Classical Archeology and Greek, although interdepartmental in nature, are governed by the regulations of the Departmental Major.

Field-of-Study Major

Each Field-of-Study Major covers a carefully worked out field of coordinated study and is under the supervision of the appropriate department and the Columbian College Committee on Studies.

The Field-of-Study Major requires no specific number of semester hours, no specific program of courses, and no specific quality-point index for the major, although the student is required to meet the over-all general requirements for the degree (at least 124 semester hours with a quality-point index of at least 2.00). Ability to pass the Major Examination is assumed to be a convincing demonstration that the student possesses the breadth, depth, and quality of knowledge of his major usually defined in terms of semester hours, courses, grades, and a better-than-average quality-point index. A pamphlet on each field is obtainable from the departmental chairman. The prospective student should place himself under the direction of the appropriate adviser immediately upon completing lower division work and beginning his junior year.

The Field-of-Study Major places special emphasis on the intellectual development of the individual student. Programs in the same major may vary, depending upon the individual student's background, previous study, and aptitudes. The student is expected to consult his adviser frequently, and the special proseminar offered in some fields gives him further opportunity for individual advice and direction in pursuing a program especially adapted to his needs and abilities. A close student-adviser relationship is essential for the student's success under the Field-of-Study Major plan.

The following Field-of-Study Majors are offered: American Civilization, French Language and Literature, History, Literature (English, American), Philosophy, Religion, Russian Language and Literature, Spanish American Literature, Spanish Language and Literature.

PROSEMINAR IN THE MAJOR

A proseminar is offered in most fields to help the student in his reading, study, and laboratory exercises acquire a coordinated knowledge of his field. It is a

presentation of the content and methods of the major field as a whole through the organization and coordination of the knowledge obtained in the various formal courses in the major subject and of material not usually included in such courses. This course is not required, but, if elected, strict attendance is essential. Six semester hours, but no qualitative grade, may be assigned. When registered in this course, the student has the privilege of visiting, subject to the approval of the instructor, any other appropriate course offered in the College. (Regular attendance in a course, either for credit or as an auditor, requires registration and payment of tuition.) Proseminars are open only to the student who has been accepted as a candidate under that specific major.

THE MAJOR EXAMINATION

The Major Examination will normally be taken at the close of the senior year; a student on a limited schedule may take it no earlier than one calendar year before graduation. A student who fails to pass a Major Examination may, at the discretion of the Committee on Studies, be re-examined at a later regular major-examination period. The Committee on Studies has general supervision of the preparation, reading, and grading of Major Examinations. Major Examinations are held each semester on dates fixed by the department or departments concerned, but in no case later than January 15 for the fall semester, May 15 for the spring semester, and August 26 for the summer session.

Departmental Majors

Departmental Majors, unlike Field-of-Study Majors, are defined in terms of credit hours, required courses, and the attainment of a quality-point index of at least 2.50 in all second-group courses taken in the major field. The minimum specific requirements for Departmental Majors are listed below the staff of instruction of the department concerned. The Chairman of the Department, or designated departmental adviser, should be consulted at registration concerning the student's program of courses; and the entire program, including electives, must be approved by the Department. The student is also expected to consult the Chairman or adviser in all matters affecting his program of studies, such as changes, substitutions, or withdrawals, and especially concerning his progress in his courses. A close student-adviser relationship is desirable.

Departmental Majors are offered in the following: Anthropology; Applied Statistics; Art History and Theory; Biology; Botany; Chemistry; Classical Archaeology and Greek (interdepartmental); Dramatic Art; Economics; Fine Arts; Geography; Geology; Germanic Languages and Literatures; Journalism; Latin; Latin American Studies (interdepartmental); Mathematical Statistics; Mathematics; Music (Music History and Literature, Music Theory, Applied Music); Physics; Political Science; Psychology; Sociology; Speech; Speech Pathology and Audiology; Zoology.

BACHELOR OF SCIENCE IN MEDICAL TECHNOLOGY

In cooperation with the University Hospital and the Department of Pathology of the School of Medicine, Columbian College offers work leading to the degree of Bachelor of Science in Medical Technology, the fourth year of which (12 calendar months) is spent at the University Hospital.

A candidate for the degree must: (1) complete the Medical Technology curriculum in the lower division of Columbian College. (2) Fulfill the Columbian College requirements for the degree, including 30 semester hours of residence (the junior year) in the upper division. In the junior year Biological Sciences 112 *Bacteriology* and 4 additional semester hours selected from second-group Zoology courses are required; it is recommended but not mandatory that the student select Biological Sciences 104 *Comparative Vertebrate Anatomy*, Biological Sciences 148 *Histology*, or Biological Sciences 164 *Vertebrate Physiology*. All or most of the remaining courses in the junior year should be selected from nonscience courses, i.e., social studies, arts, etc. (3) Complete the 12-month Medical Technology Course in the University Hospital (senior year), which constitutes the major, with an attainment of a quality-point index of 2.50.

Each candidate must make application to take the 12-month Medical Technology Course at the University Hospital; this should be done early in the junior year. While admission to the Columbian College degree program does not assure acceptance into the Medical Technology Course, George Washington University students are given preference.

A number of scholarships are provided by the University Hospital for the students enrolled in the fourth (senior) year of the degree program.

For further information concerning the Medical Technology program call 331-6386.



GRADUATE SCHOOL OF ARTS AND SCIENCES

Dean A.E. Burns

Assistant Dean W.F.E. Long

FACULTY, CONSULTANTS IN RESEARCH, AND FIELD OF STUDIES CONSULTANTS

FACULTY

Professors F.D. Allan, J.G. Allee, Jr., Joseph Aschheim, Otto Bergmann, J.W. Brewer, H.F. Bright, R.G. Brown, A.E. Burns, Paul Calabrisi, W.E. Caldwell, G.V. Carroll, I.H. Cisin, J.H. Coberly, C.W. Cole, Milton Crane, R.H. Davison, A.H. Desmond, W.R. Duryee (*Research*), Julian Eisenstein, C.E. Galbreath, C.M. Goss (*Visiting*), Wood Gray, A.M. Griffin, L.J. Griffith (*Visiting*), Andrew Gyorgy, I.B. Hansen, R.C. Haskett, P.H. Highfill, Jr., H.C. Hinton, H.H. Hobbs, Rudolph Hugh, Herbert Jehle, T.N. Johnson, R.G. Jones, Norman Kaplan, J.W. Kendrick, Hewitt Kenyon, J.C. King, D.C. Kline, J.L. Knetsch, W.H. Kraus, Solomon Kullback, Thelma Z. Lavine, H.L. LeBlanc, W.K. Legner, L.P. Leite, B.I. Levy, J.B. Levy, H.W. Lilliefors, C.D. Linton, T.P.G. Liverman, Kurt London, W.A. MacDonald, H.G. Mandel, G.E. Mazzeo, H.M. Merriman, F.H. Michael, J.W. Millar, F.N. Miller, Jr., Edith Mortensen, J.N. Mosel, S.C. Munson, Gardner Murphy (*Visiting*), C.R. Naeser, David Nelson, Benjamin Nimer, R.C. Parlett, H.J. Parry (*Research*), T.M. Peery, T.P. Perros, E.L. Phillips, R.E. Purcell, J.S. Redding, J.P. Reesing, Jr., J.W. Robb, Mary Louise Robbins, Mario Rodriguez, H.M. Sachar, R.H. Schlagel, W.E. Schmidt, R.P. Sharkey, F.R. Siegel, B.W. Smith, Henry Solomon, R.W. Stephens, C.T. Stewart, Jr., H.M. Stout, Raphael Supervia, C.T. Taam, Geza Teleki, I.R. Telford, R.B. Thompson, C.S. Tidball, C.R. Treadwell, G.V. Vahouny, R.D. Walk, R.H. Walker, Jr., D.S. Watson, R.L. Weintraub, D.G. White, R.K. White, R.E. Wood, S.N. Wrenn, Helen Jakobson, A.J. Zuchelli

Adjunct Professors J.C. Broderick, E.G. Kauffman, J.W. Pierce

Associate Professors Fred Abrams, Caroline Adams, Martha Adem, L.F. Af-
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E.A. Caress, Marie Cassidy, J.B. Christensen, A.G. Coates, Mary Ann
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I.I. Glick, Jacqueline Goodnow, W.B. Griffith, F.S. Grubar, Dagmar Hen-
ney, C.J. Herber, P.P. Hill, J.W. Hillis, Ching-Yao Hsieh, C.T. Ireland, Eva
Johnson, W.R. Johnson, W.R. Jondorf (*Research*), R.S. Jordan, Irving Katz,
R.W. Kenny, K.S. Kim (*Research*), A.D. Kirsch, R.K. Lewis, W.F.E. Long,

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Assistant Professors Eugene Abravanel, D.T. Allensworth, A.D. Andrews II, Ruth Bari, B.C. Field, M.D. Green, R.A. Hadley, G.A. Hahn (*Research*), Lois Hammer, Robert Honeygosky, N.K. Khatcheressian, David Kieserman, Philip Klubes (*Research*), Ruth Krulfeld, Myrna Lee, Subramaniam Moryadas, G.A. Olkhovsky, J.A. Quitslund, Bernard Reich, W.B. Rucker, Elizabeth Stephenson, E.A. Stone, J.A. Straw, N.A. Tilkens

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FIELD OF STUDIES CONSULTANTS

Vernon McKay, Keith Melder, Robert Vogel

HISTORY AND ORGANIZATION

The Graduate School of Arts and Sciences is responsible for advanced study and research leading to Master's degrees and the degree of Doctor of Philosophy in the arts and sciences. Graduate programs at George Washington University were first formally organized under a Graduate School in 1905, following several decades of gradual growth in a number of departments. In 1930 the

Graduate School was discontinued. Columbian College, the University's liberal arts college, then assumed responsibility for the Master of Arts and Master of Science degrees, and a newly created Graduate Council administered all Doctor of Philosophy programs. Professional schools took responsibility for advanced degrees in the professional fields.

In 1966 the Graduate Council and the Graduate Division of Columbian College were consolidated into a new Graduate School of Arts and Sciences. All graduate programs in the arts and sciences leading to the degrees of Master of Arts, Master of Fine Arts, Master of Music, Master of Science, and Doctor of Philosophy are under the Graduate School.

In addition, a Master of Philosophy degree is awarded by the School, upon recommendation of the appropriate department, to doctoral candidates who have successfully completed the General Examination for the Doctor of Philosophy degree and have begun work on the dissertation.

The School is under the direction of the Graduate Faculty of Arts and Sciences. It is the responsibility of the Faculty to set the requirements for admission to the School, to provide courses and programs of study and research for its students, to establish academic standards for its degrees, to recommend to the Board of Trustees the awarding of degrees, to lay down regulations as needed for the operation of the School, and generally to supervise its activities.

The administration of the School is vested in the Dean, who is Chairman of the Dean's Council, which is responsible to the Faculty of the School for all policy matters. The President of the University and the Vice President for Academic Affairs are ex officio members of the Faculty and the Dean's Council.

ADMISSIONS REQUIREMENTS

Application forms for admission to graduate study are obtained from the Office of the Dean of the Graduate School of Arts and Sciences. When completed, these application forms must be submitted to this Office, together with college transcripts and letters of reference.

Applicants must have academic backgrounds of excellence, usually with majors, or equivalent, in the fields in which they intend to study for advanced degrees. Normally, at least a *B* average from an accredited college is required. With evidence of special promise, such as high Graduate Record Examination scores, an applicant may be accepted whose academic record falls short of *B*. The minimum does not assure automatic acceptance. The departments may, and often do, set higher admissions standards. Moreover, the number of spaces available for new graduate students limits the number that can be accepted. Students who apply in their senior year must have completed their baccalaureate work before registration in the Graduate School.

Application for First-year Graduate Study.—College seniors should apply within a week or two following the close of their fall term to be considered for admission to the Graduate School the following fall. Later application diminishes the prospects for admission in the fall semester.

Applicants with Bachelor's degrees should apply four months or more before the semester for which they seek admission.

Application for Advanced Standing.—Applicants who hold a Master's degree or who have the equivalent of a Master's degree in graduate course work may apply for admission as transfer students seeking advanced standing toward the

degree of Doctor of Philosophy. These applications should be filed four months or more in advance of the semester for which admission is sought.

Readmission.—A student who has failed to maintain continuous registration and wishes to resume his graduate program must file an application for readmission. Readmission is not guaranteed, and the application is subject to review by the department concerned and the Dean. The student may be required to take qualifying examinations on the course work completed. Application forms for readmission are available in the Graduate School Office.

REGULATIONS

Regulations regarding REGISTRATION, FEES AND FINANCES are stated on pages 27-33; other University regulations, on pages 43-50.

GRADES

Grades for graduate work are: *A*, excellent; *B*, good; *C*, minimum pass; *F*, fail; *I*, incomplete; *W*, authorized withdrawal; *CR*, credit.

The symbol *I* (incomplete) indicates that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work for a course. The "incomplete" must be made up before the lapse of one calendar year. An "incomplete" which is not removed within one calendar year is automatically changed to an *F*.

SCHOLARSHIP REQUIREMENTS

Graduate students are expected to maintain a minimum accumulative grade average of *B* (3.00) in all course work in the program of studies. Individual departments may require a higher average. The fields of Art History and Criticism, English, History, and Psychology require a 3.25 average.

A student who receives a grade of *F* for a course in his program of studies is required to present to the Graduate School (with departmental recommendations) a written statement presenting reasons for his being allowed to continue his studies, together with a departmental approved outline of a program to be followed. A course in the program of studies for which an *F* is received cannot be subsequently removed from the program even though another course is taken as a substitute.

The grade of *I* is also given for all thesis and dissertation preparation courses until the thesis or dissertation is completed, and for *Advanced Reading and Research* (usually numbered 398) courses until the General Examination is successfully completed in its entirety.

Upon the satisfactory completion of the thesis, dissertation, or General Examination the grade *I* is changed to *CR*. The *I* in these instances is allowed to stand as long as necessary without being changed to an *F*.

A student may not repeat for credit a course in which he has received a grade of *C* or above unless required to do so by the department concerned. A written statement to this effect must be submitted for approval to the Dean's Office by the appropriate departmental chairman, and filed with the Registrar.

A graduate student may take an advanced undergraduate course (courses numbered 101-200) for graduate credit only upon the approval of the Dean

and the department at the time of registration. Such approval is granted only with the provision that students must complete additional work in order to receive graduate credit.

PROGRAM OF STUDIES

The program of studies must be approved by the departmental adviser and filed in the Graduate School Office no later than November 1 for graduate students entering in the fall semester or summer sessions, or March 15 for graduate students entering in the spring semester. A revised program of studies may be filed, when necessary, in the Graduate School Office by obtaining the approval of the departmental adviser and the Dean.

CONTINUOUS REGISTRATION

All students must maintain continuous registration while working toward a degree, except during the summer session. If continuous registration is not maintained, the student is dropped from the degree program unless leave of absence is granted by the Graduate School. A Master's degree candidate who has completed his course work and registered for thesis preparation, must maintain continuous registration while he is completing his thesis by paying the continuous registration fee, which is equivalent to one semester hour. Doctor of Philosophy students see "Academic Work Load," pages 95-96.

LEAVE OF ABSENCE

If a student is temporarily unable to continue his program of studies, he must request leave of absence for a specific period of time, not to exceed one calendar year. An exception is made for students granted Military Leave. A student who is called to active duty (or who enlists) may be granted Military Leave (see page 47) for the duration of his period of military duty upon presentation to the Graduate School of a copy of his orders and a request for such leave. When the period of leave has expired, it is the student's responsibility to notify the Graduate School at least two months in advance of a given registration period of his intention to reregister at that time. If he fails to reregister, his candidacy will be terminated.

GRADUATION REQUIREMENTS

All students must file an "Application for Graduation" form and pay the required graduation fee at the time of registration for the last semester or summer session of the final year in which they intend to graduate. The student must be registered in the Graduate School during the semester he plans to graduate. Master's and doctoral candidates may graduate in June, February, and September. A student who has completed the requirements for a degree but has not yet been awarded the degree will be issued a letter to this effect upon request.

WITHDRAWAL

Graduate students who intend to withdraw from the Graduate School should inform the School in writing. The last day for *complete* withdrawal without academic penalty is at the end of the eighth week of classes.

DEGREES

Listed below are the degree programs of the Graduate School of Arts and Sciences and the specific degrees offered, by field. The programs are directed by the departments concerned. Degree programs which bridge two or more departments are directed by committees composed of members of the departments concerned. For further information write to the Dean or the chairman of the department concerned.

The graduate course work offered in support of these degrees is shown by department in this CATALOGUE.

GRADUATE FIELDS

| Subject | Degrees Offered |
|------------------------------------|-----------------|
| I. Humanities | |
| American Civilization | |
| American Literature | M.A. Ph.D. |
| Art: | M.A. Ph.D. |
| Ceramics | M.F.A. |
| Graphics | |
| Painting | |
| Sculpture | |
| Art History and Criticism | |
| Dramatic Art | M.A. |
| English Literature | M.F.A. |
| French Language and Literature | M.A. Ph.D. |
| Germanic Languages and Literatures | M.A. Ph.D. |
| Linguistics | M.A. |
| Museology | M.A. |
| Music: | M.A. |
| Applied Music | Mus.M. |
| Conducting | |
| Music Composition | |
| Music Theory | |
| Musicology | |
| Philosophy | M.A. |
| Religion | M.A. |
| Religious Education | M.A. |
| Russian Language and Literature | M.A. |
| Spanish American Literature | M.A. |
| Spanish Language and Literature | M.A. Ph.D. |
| | M.A. Ph.D. |
| II. Social Sciences | |
| Anthropology | |
| Economics | M.A. |
| Geography | M.A. Ph.D. |
| History | M.A. |
| *International Relations | M.A. Ph.D. |
| Latin American Studies | M.A. Ph.D. |
| Political Science | M.A. |
| Sociology | M.A. Ph.D. |
| | M.A. Ph.D. |

* The School of Public and International Affairs offers a Master of Arts field in International Affairs.

| Subject | Degrees Offered | |
|---|-----------------|-------|
| III. Physical and Mathematical Sciences | | |
| Applied Statistics | M.S. | |
| Chemistry | M.S. | Ph.D. |
| Geochemistry | M.S. | Ph.D. |
| Geology | M.A., M.S. | Ph.D. |
| Mathematical Statistics | M.A. | Ph.D. |
| Mathematics | M.A. | Ph.D. |
| Physics | M.A. | Ph.D. |
| IV. Biomedical and Related Sciences | | |
| Anatomy | M.S. | Ph.D. |
| Biochemistry | M.S. | Ph.D. |
| *Biological Sciences | M.S. | Ph.D. |
| Biophysics | | Ph.D. |
| Human Ecology | | Ph.D. |
| Microbiology | M.S. | Ph.D. |
| Pathology | M.S. | Ph.D. |
| Pharmacology | M.S. | Ph.D. |
| Physiology | M.S. | Ph.D. |
| Psychology | M.A. | Ph.D. |
| Speech Pathology and Audiology | M.A. | |

COMBINED MASTER OF SCIENCE AND DOCTOR OF MEDICINE

Students in the School of Medicine may apply for the combined degrees of Master of Science and Doctor of Medicine. They must meet the requirements for admission to the Graduate School of Arts and Sciences and they must be recommended by the chairman of the department and the deans of the Graduate School of Arts and Sciences and the School of Medicine.

The Master of Science program consists of a minimum of 30 semester hours of credit and the fulfilling of the language requirement (see pages 94-95). A maximum of 12 semester hours of credit for graduate-level courses *completed as a part of the Doctor of Medicine degree curriculum* (and not already applied toward the Bachelor's degree) will be allowed in fulfillment of the requirements of the Master of Science degree. The remaining 18 semester hours of course work, which includes a thesis, must be in course work in the basic medical sciences normally required for a Master of Science degree in the Graduate School of Arts and Sciences.

REQUIREMENTS FOR THE DEGREES

THE MASTER'S PROGRAMS

The requirements listed below are applicable to candidates for the degrees of Master of Arts, Master of Fine Arts, Master of Music, and Master of Science.

1. *Academic Work Load.*—A minimum of 30 semester hours of approved graduate work is required for the Master's degrees. This includes 24 semester

* Biology, Botany, and Zoology.

hours of course work and 6 semester hours of thesis preparation. Individual departments may set requirements above this minimum. Upon approval, some portion of this requirement may be taken in courses offered by the Consortium of Universities of the Washington Metropolitan Area, Inc., or another degree-granting division of this University. A maximum of 6 semester hours may be transferred from another accredited college or university (see below). No work taken to make up deficiencies may be included in the 30 semester hours required for the Master's degree.

Full-time Master's students are expected to register for 9 to 12 semester hours of graduate work a semester and complete the degree requirements in 3 to 4 semesters*. Part-time students are expected to register for a minimum of 6 semester hours a semester and complete the degree requirements in no more than 6 semesters. The summer sessions are not counted in computing the number of semesters a student has been in residence. No more than 15 semester hours may be taken during any one semester. These requirements do not apply when a student has fewer than 9 semester hours (for full-time students) or 6 semester hours (for part-time students) remaining to complete his program. A student who finds it necessary to extend his program beyond 6 semesters (3 years) must make a written request for an extension of time.

2. *Transfer of Credit.*—A maximum of 6 semester hours of graduate course work may be approved for transfer to the Graduate School from another division of the University or another accredited college or university under the following conditions: the course work must be approved as a part of the student's program of studies, it must not have been applied to the completion of requirements for another degree, it must be graduate-level course work, it must have been taken within the past two years, and the student must have received a grade of B or better. A student seeking to transfer credits from the Division of University Students may transfer only those credits taken during the semester in which he applies and is accepted to the Graduate School of Arts and Sciences, provided the courses are approved and meet the above requirements. This action must be approved on a "Request Form" by the departmental adviser and the Dean. A transcript of the course work must be on file before the request can be considered.

3. *Foreign Language Requirements.*—A candidate for the degree of Master of Arts, Master of Science, or Master of Music must pass a reading examination in a foreign language before he completes 15 semester hours of graduate course work. The student should contact the appropriate language department to make arrangements to take the examination, or he may register for and successfully complete a reading course for nonmajor students. The language selected by the candidate must be approved by his department. No candidate is permitted to take language reading examinations or register for language reading courses more than 3 times. A candidate whose field is a foreign language or literature may not select that language to meet this requirement.

A graduate student whose native language is other than English may not select his native language to meet the foreign language examination requirement. He may select English to fulfill the requirement with the approval of his department. The student should contact the English Department to make arrangements to take the examination in English.

* Master of Science in the field of Pathology requires a longer period of time, see page 319.

A candidate for the degree of Master of Fine Arts may register for a methods course selected by his department instead of taking a foreign language reading examination.

4. *The Thesis*.—All candidates for Master's degrees must complete a thesis, which is equivalent to 6 semester hours of graduate work. The thesis may be of a research, expository, critical, or creative type. The main purpose of a Master's thesis is to demonstrate the student's ability to make independent use of the information and training acquired through his other disciplines and to furnish objective evidence of his constructive powers in his chosen field. The student registers for 6 semester hours of thesis research and must complete the thesis no later than two calendar years after his initial registration for thesis research. If the thesis is not completed within this time limit, the student must reregister for 6 semester hours of thesis research. Registration for thesis research entitles the student to the advice and direction of the member of the faculty under whom the thesis is to be written. The thesis subject must be approved by the professor who will be directing it and filed in the Graduate School Office prior to or at the time of registration for thesis research. The thesis, in its final form with one copy and a certificate of approval signed by the thesis director and at least one departmental reader, must be presented to the Dean no later than the date announced in the University calendar. All theses must meet the form, style, and other requirements set forth in the pamphlet, *Information Concerning Theses and Dissertations*, available in the Office of the Dean.

5. *Master's Comprehensive Examination*.—Master's degree candidates must pass a Master's Comprehensive Examination in the major subject. Examinations are held on dates fixed by the departments, so that results can be filed in the Graduate School Office the day before the faculty meets to approve the list of graduates (approximately two weeks before graduation).

A student who fails to pass the Master's Comprehensive Examination may, in exceptional circumstances, and with the approval of the department and the Dean, repeat the Examination, but only after the lapse of one semester. If he fails a second time, no further opportunity to take the Examination is permitted.

THE DOCTOR OF PHILOSOPHY PROGRAM

The minimum requirements for the doctoral program are as follows:

1. *Academic Work Load*.—The Doctor of Philosophy degree program requires registration for a minimum of 48 semester hours beyond the baccalaureate and the successful completion of the General Examination prior to registration for *Dissertation Research*. Of these 48 semester hours, 24 hours of acceptable graduate work may be transferred from work at the Master's degree level at George Washington University or another accredited college or university. A prospective student for the doctoral program may by-pass the Master's degree with the approval of his department.

A full-time student is expected to register for 9 to 12 semester hours a semester until he has less than 9 semester hours remaining to complete the 48 hours required prior to the General Examination. When at least 40 of the 48 required semester hours have been completed, the student must register in the following semester for sufficient semester hours to fulfill the 48-hour requirement. A part-time student is expected to register for 6 semester hours a semester until the 48-hour requirement has been fulfilled. With departmental approval, a por-

tion of the 48 required semester hours may be in *Advanced Reading and Research* (usually numbered 398), a course for students preparing for the General Examination.

If the student has not successfully completed his General Examination upon completion of the 48-semester hour requirement, he must maintain continuous registration (one semester hour) until he successfully completes the General Examination.

The Master of Philosophy degree is awarded upon departmental recommendation to doctoral students who have successfully completed the General Examination for the degree of Doctor of Philosophy and have begun work on the dissertation.

Following successful completion of the General Examination, the student must register for 24 semester hours of *Dissertation Research* (usually numbered 399). Full-time students register for 9 to 12 semester hours a semester for 2 semesters, and for sufficient hours in the third semester to complete the 24-semester hour requirement. Part-time students must register for 6 semester hours a semester for 4 semesters. If the dissertation has not been completed during the time the student has registered for the required 24 hours, he must register for 3 semester hours of *Dissertation Research* each succeeding semester until the satisfactory completion of the dissertation and the successful completion of the final Oral Examination.

2. *Foreign Language and Optional Requirements.*—The foreign language reading examination requirement and options are as follows:

- (a) two foreign language reading examinations;
- (b) one foreign language reading examination and an examination in one tool requirement (mathematics, statistics, or computer programming);
- (c) high-level proficiency in one foreign language.

The Doctoral Program Committee makes the most appropriate choice.

The examination in one language (or tool requirement) must be passed by the beginning of the second semester following admission; the examination in the second language (or tool requirement) must be passed within a year following the first examination. These requirements may be fulfilled by registering for and successfully completing appropriate tool courses for nonmajor students.

A doctoral student whose native language is other than English may not elect his native language to meet the foreign language examination requirement. He may elect English to fulfill one of the two language requirements (see above), with the approval of his department. The student should contact the English Department to make arrangements to take the examination in English.

A doctoral student may omit a tool preparation course at George Washington University if he has had a similar course at another college or university. However, his proficiency in that tool must be validated by an examination at this University.

Further details for meeting the various tool requirements can be obtained from the Office of the Dean.

3. *The General Examination.*—No later than the semester following the completion of the course requirements, the student is required to complete the General Examination. In some departments as many as two of the several examinations which together constitute the General Examination may be "written off." This is done by completing a year course and by passing a special exam-

ination covering the subject matter. The examinations in other fields are usually from 5 to 6 hours in length. A "cumulative examination" system is in effect in the fields of Chemistry and Physiology. Students in these fields should consult these departments for information about this system.

4. *The Dissertation.*—A doctoral dissertation is required of each candidate as evidence of his ability to perform scholarly research and to interpret its results. The candidate's dissertation subject and plan must be approved by his Director of Research and by two members of his Doctoral Program Committee. This is done usually after the General Examination has been passed but before actual research has begun.

No later than the date specified in the University calendar, the candidate must submit to the Dean two complete copies of the dissertation and an abstract for inclusion in the announcement of the examination and for reproduction by University Microfilms, Inc.

When the dissertation has been approved by the Director and two members of the Doctoral Program Committee and filed with the Dean, the candidate is given an oral examination which is open to the public. A committee of examiners (composed of Graduate School Faculty and, when appropriate, outside scholars) conducts the examination. If the candidate passes, he is recommended by the Graduate School for the degree of Doctor of Philosophy.

Detailed information regarding regulations for the form and reproduction of the dissertation is available in the Office of the Dean. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the abstract of his dissertation, and for the basic service rendered by University Microfilms, Inc.

POSTDOCTORAL STUDY

George Washington University doctoral graduates may continue any studies in the University without payment of tuition, and enjoy all University library privileges. Such graduates are required to pay only the usual "continuous registration" fee in order to establish their active membership in the University. The use of laboratory space and equipment is contingent upon availability, and the cost of all laboratory or special library material is paid by the graduate. Special arrangements for such privileges must be made with the Dean well before the semester in which the graduate wishes to register. Postdoctoral work taken under this privilege may not be applied toward any degree offered by the University.

FELLOWSHIPS, ASSISTANTSHIPS, TRAINEESHIPS

A limited number of graduate teaching fellowships are assigned annually to certain departments of instruction open to students registered in the Graduate School of Arts and Sciences. In many departments of instruction graduate teaching fellows are appointed to assist in the academic program. Applicants for these fellowships should inquire directly of the chairman of the department concerned regarding vacancies, details of appointment, and the kind of personal data to be supplied for consideration. Appropriate forms are available at the Office of the Graduate School.

In addition, the Graduate School of Arts and Sciences has a number of fellowships. Applicants should write directly to the Dean for information and application forms.

The University is participating in the following Government Fellowship Programs: National Science Foundation Fellowships and Traineeships, United States Public Health Service Training Grants, and National Defense Education Act (Titles IV and VI) Fellowships. Qualified students should write directly to the Dean of the Graduate School of Arts and Sciences for information and applications for these fellowships.

Completed applications for all fellowships, assistantships, or traineeships must be filed by February 1. Scores on the Graduate Record Examination are required.



SCHOOL OF EDUCATION

Dean Rodney Tillman

Assistant Deans R.E. Baker, B.S. Root

FACULTY

Professors J.G. Allee, Jr., G.L. Angel, R.E. Baker, Perry Botwin, Elizabeth Burtner, W.T. Carroll, Mary Ellen Coleman, V.J. DeAngelis, H.G. Detwiler, R.G. Hanken, Martha Rashid, B.S. Root, Carol St. Cyr, Daniel Sinick, Loretta Stallings, Rodney Tillman

Associate Professors J.S. Aven (Research), E.S. Beach, Jr., J.G. Boswell, Marcella Brenner, Bertice Cornish, R.S. Cottrell, Jr., Lyndale George, Eva Johnson, Virginia Kirkbride, A.D. Kirsch, C.O. McDaniels, Margaret McIntyre, Leonard Nadler, Jeanne Snodgrass, Maida Withers

Assistant Professors Martha Bair, B.P. Berube, K.E. Bumgarner, Gayle Clapp, R.H. Dahl, Gloria Horrworth, Nancy Johnson, S.J. Korcheck, Judith Leitner, Donald Linkowski, Mabel McEwan, Dorothy Moore, Margaret Moss, Honey Nashman, Wretha Petersen, R.W. Prouty, C.B. Reed, M.G. Van Dyke, Lawrence Winkler

Instructors Carolyn Baldwin, Charmaine Ciardi, Kayte Fearn, Judith Young

COMMITTEES*

THE DEAN'S COUNCIL†

1968: Gloria Horrworth, C.O. McDaniels

1969: J.G. Boswell, M.G. Van Dyke

1970: G.L. Angel, C.B. Reed

COMMITTEE ON GRADUATE STUDIES†

R.E. Baker (*Chairman*), G.L. Angel, E.S. Beach, J.G. Boswell, Perry Botwin, W.T. Carroll, H.G. Detwiler, Virginia Kirkbride, A.D. Kirsch, C.O. McDaniels, Leonard Nadler, Martha Rashid, B.S. Root, Carol St. Cyr, Daniel Sinick

* The Dean and Assistant Deans of the School of Education are ex officio members of all committees.

† Elected by the Faculty.

COMMITTEE ON ADMISSION AND ADVANCED STANDING*

B.S. Root (*Chairman*), V.J. DeAngelis, J.Y. Ruth, Loretta Stallings

COMMITTEE ON SCHOLARSHIP

B.S. Root (*Chairman*), Perry Botwin, V.J. DeAngelis, Loretta Stallings

INTRODUCTION

It is the purpose of the School of Education to prepare teachers, counselors, and administrators for the higher ranges of educational service and to offer experienced teachers opportunities to extend their education. The School includes the departments of Education, Physical Education, and Special Education. It offers both graduate and undergraduate work. Other departments of the University provide general education and subject-matter courses needed for a well-balanced program of teacher education. In addition to programs of study leading to the degrees, the School offers nondegree programs for certification.

Individually planned programs are provided for liberal arts graduates and for housewives and retired military personnel with appropriate degrees who wish to prepare for teaching. The School also provides a wide range of courses of interest to emergency teachers who wish to qualify for teaching certificates and teachers who wish to renew licenses. Degree programs in selected areas of adult education are offered.

Laboratory and clinical facilities are provided by the University Reading Center and Speech and Hearing Clinic. In cooperation with public and private schools and a wide variety of social agencies, ample opportunity for field experience is provided.

In addition to a full schedule of weekday courses during the academic year, classes are offered in the evening, on Saturday, and during the summer for the convenience of teachers-in-service.

HISTORICAL DEVELOPMENT

The University began offering professional courses for teachers in 1904-5, and in 1907 it established a Division of Education. In 1909, the Division of Education became the Teachers College, which in its early years was concerned largely with teacher preparation on the undergraduate level.

In 1928, the Teachers College became the School of Education, and greater provision was made for advanced study. Graduate enrollment has steadily increased, and today the School has a considerably larger number of graduate than undergraduate students.

EDUCATION FOR TEACHERS

Programs are planned to provide a broad general education, adequate mastery of the content, and professional competence. The relative emphasis placed on each of these depends on the student's teaching-level plan. For example, ele-

* Appointed by the Dean.

mentary school teachers, since they teach all subjects, need preparation of greater breadth and less specialization than secondary school teachers.

Four years of full-time study is an acceptable minimum for adequate preparation for teaching. Five years terminating in a Master of Arts in Education degree are needed for superior preparation which will command higher salaries and opportunities for promotion. During the first two years, the student is registered in the lower division of Columbian College of Arts and Sciences, the liberal arts college of the University, where he acquires the background of general education so essential to success as a teacher. Here he is assigned a special adviser from the School of Education to assist in planning his program. The student may defer work toward the Master's degree until after a period of teaching; he may continue toward his Master's immediately after receiving his Bachelor's degree; or he may, on entering the School of Education in his junior year, register for the remaining three years of the five-year program leading to the simultaneous confirmation of the degrees of Bachelor of Arts in Education and Master of Arts in Education. The five-year program is advised, because it permits careful planning from the outset toward the student's teaching goal and adequate preparation in two teaching fields.

REGULATIONS

Regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES are stated on pages 23-33; other University regulations, on pages 43-50.

ACADEMIC WORK LOAD

Fifteen to 17 semester hours of credit constitute a normal program. A student with a quality-point index of 3.00 or higher may, with the permission of the Dean, enroll for 18 or 19 hours. No student may enroll for more than 19, except by permission of the Committee on Scholarship.

A student employed 15 hours or less a week may carry a normal program of college work.

A student employed from 16 to 25 hours a week may enroll for 12 or 13 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 15 or 16 hours.

A student employed from 26 to 34 hours a week may enroll for 9 or 10 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 12 or 13 hours.

A student employed 35 hours or more a week may enroll for 6 or 7 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 9 or 10 hours.

A student who increases his hours of employment after registration or at any time during a semester must report immediately to the Dean so that his program may be adjusted, if necessary.

The Bachelor's Degrees

THE SCHOOL OF EDUCATION OFFERS PROGRAMS leading to the degrees of Bachelor of Arts in Education and Bachelor of Science in Physical Education.

The program of each student must be approved by a Faculty adviser. Since each student's program is defined by his particular needs, it is important that the student have a clear concept of his major interest in education, and also that he be familiar with the teaching-certificate requirements of the locality in which he expects to teach.

ENTRANCE REQUIREMENTS

Bachelor of Arts in Education and Bachelor of Science in Physical Education.—The satisfactory completion of the appropriate curriculum in the lower division of Columbian College of Arts and Sciences (see pages 78–79); the equivalent from another accredited higher institution; or a certificate of graduation from an approved normal school or the equivalent is required. Applicants must have personality traits that give promise of success as a teacher.

REQUIREMENTS FOR THE DEGREES

To be recommended for a degree a student must satisfy the admission, residence, scholarship, and curriculum requirements.

RESIDENCE

Candidates for the Bachelor's degrees must complete satisfactorily while in the School of Education a minimum of 30 semester hours, 9 of which, with the approval of the adviser, may be in off-campus courses of the College of General Studies.

For full details concerning continuous registration, see page 47.

SCHOLARSHIP

For the system of grading and of computing scholarship, see pages 44–45.

In order to graduate, a student must have a quality-point index of at least 2.00. *Probation.*—A student who fails to maintain a quality-point index of at least 2.00 is placed on probation. He remains on probation as long as his index is below 2.00, or until his probation is removed by the Committee on Scholarship.

Suspension.—A student on probation who fails to raise his index to 2.00 within the time specified may be suspended.

A student suspended for poor scholarship may, within ten days, appeal his case to the Committee on Scholarship through the Dean. If the case appears to be remediable and the student seems likely to improve his scholarship, the Committee may readmit him on probation. A student denied readmission may, again, after a lapse of a calendar year, petition the Committee through the Dean for readmission. A student suspended twice will not be readmitted.

CURRICULUM REQUIREMENTS

In all Bachelor's curricula at least 30 semester hours must consist of courses numbered above 100.

CREDIT/NO CREDIT OPTION (see pages 44–45)

BACHELOR OF ARTS IN EDUCATION

The objective of programs leading to the degree of Bachelor of Arts in Education is to provide (1) general educational backgrounds; (2) functional command of ideas, concepts, knowledge, and skills in one or more teaching fields; (3) mastery of basic professional information and skills adequate for the beginning teacher; and (4) development of attitudes needed for success in teaching.

The general educational backgrounds needed by prospective teachers are obtained through precollege education, college courses, work experience, leadership activities, student campus activities, and off-campus cultural opportunities.

Normally, from 65 to 67 semester hours of the total requirement are completed in the lower division of Columbian College of Arts and Sciences of this University or in an equivalent institution elsewhere (see "Education," page 78). Since the teaching fields differ in content, scope, and complexity, some programs are longer than others. None requires less than 126 hours of satisfactory work, exclusive of required Physical Education.

Work experience, leadership activities, participation in student campus activities, and the utilization of off-campus cultural opportunities.—As part of formal course work and on their own initiative, students of the School of Education are expected to take full advantage of the many opportunities in the Washington area for developing leadership skills. Advisers are available to help students plan these experiences.

NATIONAL TEACHER EXAMINATIONS

All candidates for the degree of Bachelor of Arts in Education are required to take the National Teacher Examinations. Those expecting to graduate in June should take the examinations the previous February or April; those expecting to graduate in February, in July or November. Students expecting to complete degree requirements during the Summer Sessions should take the examinations in April or July.

Students receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service. Students must request the Testing Service to send copies of test scores to the School of Education.

Students required to take the examinations must register for them in the Office of the Dean at least thirty days prior to the date of examination. Details concerning time, place, registration, and fees may be obtained in the Office of the Dean.

TEACHING-FIELD PREPARATION

Teaching-field preparation depends upon the teaching position for which the student is preparing. Those planning to teach in elementary schools need a degree of competency in several fields. Those preparing to teach in junior or senior high schools must demonstrate competency in a major teaching field. A minor teaching field is optional, but recommended. Ordinarily, students preparing to teach in evening schools for adults are required to prove competency in only one teaching field. The student should begin teaching-field preparation while in the lower division of Columbian College.

Teaching-field requirements, developed in cooperation with appropriate departments of the University, include satisfactory completion of prescribed academic courses in one or more fields, a satisfactory score on the special field examination of the National Teacher Examinations,* and satisfactory completion of the prescribed special methods courses.

Prescribed academic courses vary in number in accordance with the scope and complexity of the teaching field and the license requirements of the various states. Minimum academic course requirements for each major teaching field are listed on succeeding pages. Minor teaching-field requirements are somewhat less than those of a major field. Students preparing to teach on the elementary level are advised to use electives to increase their mastery of content in an academic field or an area of specialization.

The prescribed courses in special methods are concerned primarily with methods of initiating, guiding, and evaluating learning experiences dealing with the content of teaching fields. They attempt to bring to the student specific suggestions drawn from the accumulated experience of successful teachers. However, in addition, the courses review the teaching-field content currently in use in schools, and examinations at the end of courses provide the final test of competency in the teaching fields.

PREScribed COURSES IN THE VARIOUS TEACHING FIELDS

| Art | | Semester Hours |
|--------------|---|-------------------|
| Art 1: | Art Appreciation..... | 3 |
| Art 31-32: | Survey of Western Art, or | |
| Art 71-72: | Introduction to the Arts in America..... | 6 |
| Art: | To be selected from second-group Art History courses or any third-group Art History courses open to the under- graduate | 6 |
| Art: | To be selected from the following..... | 27 |
| † Art 21-22: | Design I: Basic | |
| Art 41-42: | Drawing I | |
| Art 51-52: | Ceramics I | |
| Art 57-58: | Graphics I | |
| Art 65-66: | Painting I | |
| Art 81-82: | Sculpture I | |
| Art 121-22: | Design II: Structured | |
| Art 123-24: | Design III: Individual Problems | |
| Art 125-26: | Painting II | |
| Art 127-28: | Painting III | |
| Art 131-32: | Ceramics II | |
| Art 139-40: | Design Workshop | |

* Special field examinations of the National Teacher Examinations are available in elementary education; early childhood education; biology and general science; English language and literature; industrial arts; mathematics; chemistry, physics, and general science; social studies; physical education; business education; music education; home economics; and art education.

Students preparing to teach history or geography take the special field examination in social studies.

Students preparing to teach in fields in which special field examinations are not available (language and speech) must obtain a satisfactory score on a special field examination given by the instructor in the special methods course involved.

† Art 21-22 or permission of Department Chairman is prerequisite to all other studio courses.

SCHOOL OF EDUCATION 105

Semester
Hours

| | | |
|-------------|--------------------------------|--|
| Art 143-44: | Serigraphy | |
| Art 151-52: | Ceramics III | |
| Art 153-54: | Graphics II | |
| Art 157-58: | Graphics III | |
| Art 165-66: | Painting, Drawing, Composition | |
| Art 175-76: | Design Projects | |
| Art 179-80: | Sculpture II | |
| Art 189-90: | Sculpture III | |

Total..... 42

Biology

| | | |
|-------------|---|-----|
| B Sc 11-12: | Introductory Biology for Science Majors..... | 8 |
| B Sc 101-2: | Invertebrate Zoology..... | 6 |
| B Sc 104: | Comparative Vertebrate Anatomy..... | 4 |
| B Sc 108: | Organic Evolution, or | |
| B Sc 127: | Genetics | 3-4 |
| B Sc 163: | Human Physiology | 4 |
| B Sc: | Advanced Botany courses as approved by the adviser..... | 6 |
| Chem 11-12: | General Chemistry..... | 8 |
| Phys 1, 2: | General Physics..... | 8 |

Total..... 47-48

Chemistry

| | | |
|--------------|---|---|
| *Chem 11-12: | General Chemistry, or | |
| Chem 15-16: | Intensive General and Analytical Chemistry..... | 8 |
| *Chem 22: | Introductory Quantitative Analysis..... | 4 |
| Chem 51-52: | Organic Chemistry..... | 6 |
| Chem 53-54: | Organic Chemistry Laboratory..... | 2 |
| Chem 111: | Physical Chemistry..... | 3 |
| Chem 191: | History of Chemistry..... | 2 |
| Math 6: | Plane Trigonometry..... | 3 |
| Math 30: | Precalculus | 3 |
| Math 31: | Calculus of One Variable..... | 3 |
| Phys 1, 2: | General Physics | 8 |

Total..... 38-42

Dance

| | | |
|---------|----------------------------------|-----|
| Music: | As approved by the adviser..... | 4-6 |
| PE 49: | Human Anatomy..... | 3 |
| PE 50: | Kinesiology | 3 |
| PE 56: | Dance Technique and Theory..... | 1 |
| PE 107: | Teaching Recreational Dance..... | 1-2 |
| PE 109: | Dance Composition I..... | 1-2 |
| PE 110: | Dance Composition II..... | 1 |
| PE 117: | Teaching Modern Dance..... | 3 |
| PE 118: | Dance Production..... | 3 |
| PE 119: | Creative Dance for Children..... | 3 |

* Chemistry 22 required if Chemistry 11-12 is elected.

| | Semester Hours |
|--|-------------------|
| PE 120: Repertory | 1 |
| PE 134: Rhythmic Analysis through Creative Movement..... | 3 |
| PE 135-36: Survey of Dance History..... | 6 |
| Speech and Drama: As approved by the adviser..... | 4-6 |
| Total..... | 37-43 |

Earth Science

| | |
|---|----|
| B Sc 11-12: Introductory Biology for Science Majors..... | 8 |
| Chem 11-12: General Chemistry..... | 8 |
| Geol 1-2: Introductory Geology..... | 6 |
| Geol 14: General Petrology..... | 3 |
| Geol 101: History of Geological Sciences..... | 3 |
| Geol 122: Structural Geology..... | 3 |
| Geol 125: Marine Geology..... | 3 |
| *Math 3: College Algebra..... | 3 |
| *Math 6: Plane Trigonometry..... | 3 |
| Phys 1: General Physics..... | 3 |
| Other Courses: To be selected from the following as approved by the adviser | 4 |
| Anth 186: Physical Anthropology | |
| Geol 128: Geomorphology | |
| Geol 141: Introductory Geochemistry | |
| Geol 151-52: Invertebrate Paleontology | |
| Geol 163: Sedimentation | |
| Geol 166: Principles of Stratigraphy | |
| Total..... | 50 |

Elementary Education

| | |
|---|-------|
| Art: As approved by the adviser..... | 3 |
| Geog 51: Introduction to Geography..... | 3 |
| Geog 52: World Regions..... | 3 |
| Hist 71-72: Introduction to American History..... | 6 |
| Math 9, 10: General Mathematics I, II..... | 6 |
| Music: As approved by the adviser..... | 3 |
| Physical Education: As approved by the adviser..... | 3 |
| Science: As approved by the adviser..... | 9-12 |
| Other Courses: To be selected from the following as approved by the adviser | 8 |
| Anth 1-2: Introductory Anthropology | |
| †Econ 1-2: Principles of Economics | |
| Hist 39-40: European Civilization in Its World Context | |
| P Sc 5-6: Introduction to Political Science | |
| Soc 1-2: Introductory Sociology | |
| Total..... | 42-45 |

* Additional mathematics is required for some advanced geology courses.
† Recommended for students planning to apply for certification in Virginia.

English

| | Semester Hours |
|---|-------------------|
| Engl 1 or 1x, 2: English Composition..... | 6 |
| Engl 52: Introduction to English Literature..... | 3 |
| Engl 71-72: Introduction to American Literature..... | 6 |
| Engl 109: Expository Writing..... | 3 |
| Engl 125: Introduction to English Linguistics..... | 3 |
| Engl 135-36: Shakespeare | 6 |
| Sp&D 11: Voice and Diction..... | 3 |
| *Engl: To be selected from the following as approved by the adviser | 9 |
| Engl 151: The Romantic Movement | |
| Engl 162: Victorian Literature | |
| Engl 165-66: The 20th Century | |
| Engl 170: The American Short Story | |
| Engl 171-72: Studies in American Literature | |
| Engl 173-74: Major American Poets | |
| Engl 175-76: American Drama | |
| Engl 177-78: The American Novel | |
| Engl 182: The English Novel | |
| Engl 183-84: The English Drama | |
| Total..... | 39 |

French

| | |
|---|-------|
| Fren 9-10: French Conversation and Composition, or | |
| Fren 12: French Conversation and Composition (Intensive)..... | 6 |
| Fren 51-52: Survey of French Literature and Civilization, or | |
| Fren 91-92: Analyse de texte | 6 |
| Fren 103: Problems of Pronunciation and Intonation | 3 |
| Fren 109-10: Advanced French Conversation and Composition..... | 6 |
| French: To be selected from the following | 18 |
| Fren 119-20: French Literature of the Middle Ages and the Renaissance | |
| Fren 121-22: 17th Century French Literature | |
| Fren 123-24: 18th Century French Literature | |
| Fren 125-26: 19th Century French Literature | |
| Fren 127-28: 20th Century French Literature | |
| Other Courses: Recommended from the following but not required | 6 |
| Art 109: 19th Century Art in Europe | |
| Art 110: Contemporary Art | |
| Engl 125: Introduction to English Linguistics | |
| Foreign Lang: Other than French as approved | |
| Hist 141-42: History of France | |
| Psyc 115: Psychology of Language and Communication | |
| Total..... | 39-45 |

* Not required for the minor teaching field.

General Science*

| | Semester Hours |
|--|-------------------|
| B Sc 3-4: Introductory Biology for Nonscience Majors..... | 6 |
| †Chem 11-12: General Chemistry, or | |
| †Chem 15-16: Intensive General and Analytical Chemistry..... | 8 |
| ‡Chem 22: Elementary Quantitative Analysis..... | 4 |
| Phys 1, 2: General Physics, or | |
| Phys 9-10: Introduction to Astronomy..... | 6-8 |
| ‡Science: Additional courses as approved by the adviser..... | 10 |
| Math: To be selected from the following..... | 9 |
| Math 3: College Algebra | |
| Math 6: Plane Trigonometry | |
| Math 30: Precalculus | |
| Math 31: Calculus of One Variable | |
| Math 32: Calculus of Several Variables | |
| Math 33: Calculus of Vector Functions | |
| Total..... | 41-47 |

Geography

| | |
|---|----|
| Geog 51: Introduction to Geography..... | 3 |
| Geog 52: World Regions..... | 3 |
| Geog 103: Cartography and Graphics..... | 3 |
| Geog 104: Quantitative Cartography..... | 3 |
| Geog 105: Weather and Climate | 3 |
| Geol 1: Introductory Geology | 3 |
| §Geog: To be selected from the following..... | 9 |
| Geog 125: Transportation Geography | |
| Geog 126: World Economic Geography | |
| Geog 127: World Population and Settlement | |
| Geog 132: Natural Resources | |
| Geog 134: Location of Industry | |
| Geog 141: Urban Settlement | |
| Geog 146: World Political Geography | |
| §Geog: To be selected from the following..... | 3 |
| Geog 151: United States and Canada | |
| Geog 153: Europe | |
| Geog 155: Africa | |
| Geog 161: Latin America | |
| Geog 165: Asia | |
| Geog 166: Soviet Union | |
| Total..... | 30 |

* May not be chosen as a minor teaching field.

† If Chemistry 11-12 is elected, it must be followed by Chemistry 22. If Chemistry 15-16 is elected, Chemistry 22 is not required; however, Chemistry 50 is recommended following Chemistry 16.

‡ Eighteen semester hours in one science field are required for certification.

§ Not required for the minor teaching field.

German

| | Semester Hours |
|---|-------------------|
| Germ 9-10: German Conversation and Composition..... | 6 |
| Germ 51-52: Introduction to German Literature..... | 6 |
| Germ 179-80: Advanced Conversation and Composition..... | 6 |
| *German: Additional courses as approved by the adviser..... | 14 |
| Total..... | 32 |

History

| | |
|--|-----------|
| Hist 39-40: European Civilization in Its World Context, or | |
| Hist 91-92: World Civilizations..... | 6 |
| Hist 71-72: Introduction to American History..... | 6 |
| Hist: Research Seminar (see adviser, Department of History).... | 6 |
| Hist: Six semester hours in each of three of the following groups as approved by the adviser..... | 18 |
| *Hist: Additional semester hours from any one of the following groups as approved by the adviser..... | 6 |
| Total..... | 42 |

GROUP 1: AMERICAN HISTORY

- Hist 167: American Colonial History
- Hist 169: The American Revolution
- Hist 170: U.S. Early National History
- Hist 171-72: U.S. Social History
- Hist 173-74: The Negro in American History
- Hist 175-76: U.S. Political History
- Hist 177: The Ante-bellum South
- Hist 179-80: U.S. Economic History
- Hist 181-82: U.S. Diplomatic History
- Hist 183: Oversea Expansion of the United States
- Hist 185: Representative Americans

GROUP 2: EUROPEAN HISTORY

- Hist 109: Early Aegean and Greek Civilizations to 200 B.C.
- Hist 110: The Roman World to 455 A.D.
- Hist 111-12: Medieval History
- Hist 121: The Renaissance in Western Europe
- Hist 131-32: History of Germany
- Hist 139-40: World History in the 20th Century
- Hist 141-42: History of France
- Hist 145-46: History of Russia
- Hist 147: Economic History of Europe
- Hist 149-50: European Diplomatic History
- Hist 151-52: History of England and Great Britain
- Hist 153: Tudor England
- Hist 154: Stuart England
- Hist 157: 20th Century European Diplomatic History
- Hist 158: Modern Jewish History

* Not required for the minor teaching field.

GROUP 3: THE EASTERN WORLD

- Hist 145-46: History of Russia
 Hist 187: History of Modern China
 Hist 193: History of the Near East
 Hist 194: History of the Modern Near East
 Hist 195-96: History of East Asia

GROUP 4: LATIN AMERICAN HISTORY

- Hist 162: History of Spain and Portugal
 Hist 163-64: History of Latin America
 Hist 165: History of Brazil
 Hist 166: History of Mexico
 P Sc 177: Governments and Politics in Latin America
 P Sc 178: Latin America: Political Patterns and International Relations

Mathematics

| | Semester Hours |
|---|-------------------|
| Math 30: Precalculus | 3 |
| Math 31: Calculus of One Variable..... | 3 |
| Math 32: Calculus of Several Variables..... | 3 |
| Math 33: Calculus of Vector Functions..... | 3 |
| Math 122: Introduction to Abstract Algebra..... | 3 |
| Math 124: Introduction to Matrix Theory..... | 3 |
| Math 135: Projective Geometry..... | 3 |
| *Math: Three additional courses in Mathematics approved by the adviser | 9 |
| Stat 155: Introduction to Probability..... | 3 |
| Total..... | 33 |

Music

| | |
|---|----|
| Mus 5-6: Elementary Harmony..... | 6 |
| Mus 103-4: History of Music..... | 6 |
| Mus 131-32: Advanced Harmony..... | 6 |
| Applied Music: Voice or major instrument..... | 6 |
| Applied Music: Minor instruments..... | 6 |
| Ensemble: Choral or Orchestral..... | 3 |
| Music Literature: As approved by the adviser..... | 6 |
| Music Theory: As approved by the adviser..... | 3 |
| Total..... | 42 |

Physical Education†

| | |
|---|-----|
| B Sc 3-4: Introductory Biology for Nonscience Majors..... | 6 |
| B Sc 163: Human Physiology..... | 4 |
| PE 41: Personal Health and First Aid (men)..... | 1-2 |
| PE 45: Techniques of Physical Education Activities (men)..... | 3 |

* Not required for the minor teaching field.

† May be chosen as a minor field only, for Bachelor of Arts in Education. See pages 115-16 for requirements for the Bachelor of Science in Physical Education.

Semester
Hours

| | |
|---|---|
| PE 49: Human Anatomy..... | 3 |
| PE 50: Kinesiology | 3 |
| *PE 51-52: Teaching Physical Education Activities (women)..... | 6 |
| †PE 101: Physical Education in the Elementary School..... | 3 |
| PE 107: Teaching Recreational Dance..... | 1 |
| *PE 111-12: Teaching Physical Education Activities (women)..... | 6 |
| *PE 115-16: Intramural Program Organization (men)..... | 4 |
| *PE 117: Teaching Modern Dance (women)..... | 2 |
| †PE 119: Creative Dance for Children (women)..... | 3 |

Total..... 23-31

Physics

| | |
|---|---|
| Chem 11-12: General Chemistry..... | 8 |
| Math 30: Precalculus | 3 |
| Math 31: Calculus of One Variable..... | 3 |
| Math 32: Calculus of Several Variables..... | 3 |
| Math 33: Calculus of Vector Functions..... | 3 |
| Phys 1: General Physics..... | 4 |
| Phys 30: Introductory Modern Physics..... | 4 |
| Phys 31-32: Introduction to Theoretical Physics..... | 4 |
| Phys 51-52: Introduction to Experimental Physics..... | 4 |
| Phys: To be selected from the following..... | 3 |
| Phys 161: Mechanics I | |
| Phys 163: Optics | |
| Phys 164: Thermodynamics | |
| Phys 165: Electromagnetic Theory | |
| Phys 167: Principles of Quantum Physics | |

Total..... 39

Russian

| | |
|--|---|
| Slav 9-10: Russian Conversation and Composition..... | 6 |
| Slav 91-92: Introduction to Russian Literature..... | 6 |
| Slav 125: Russian Linguistic Structure I..... | 3 |
| Slav 126: Russian Linguistic Structure II..... | 3 |
| Slav 131: 18th Century Russian Literature..... | 3 |
| Slav 141-42: 19th Century Russian Literature, or | |
| Slav 151-52: 20th Century Russian Literature..... | 6 |
| Slav 197: Special Problems in Teaching Russian..... | 3 |
| ‡Slav: Additional courses from the following as approved by the adviser | 9 |
| Slav 101-2: Readings in Modern Russian | |
| Slav 109-10: Advanced Russian Conversation and Composition | |
| Slav 128: Dostoevsky, the Man and the Artist | |
| Slav 143-44: The Russian Novel | |
| Slav 145-46: The Russian Short Story | |
| Slav 153: Turgenev | |
| Slav 154: Gogol | |
| Slav 156: Leo Tolstoy, His Life and Works | |

* Required only of those preparing to teach on the secondary school level.

† Required only of those preparing to teach on the elementary school level.

‡ Not required for the minor teaching field.

| | | |
|--------------|--|--|
| Slav 161-62: | Russian Culture | |
| Slav 165: | Soviet Literature from the Revolution to World War II | |
| Slav 166: | Soviet Literature from World War II to the Present | |
| Slav 193-94: | Introduction to Slavic (non-Russian) Literature—in English | |

Total..... 39

Social Studies

| | | |
|-----------------|---|----|
| Econ 1-2: | Principles of Economics..... | 6 |
| Hist 39-40: | European Civilization in Its World Context, or | |
| Hist 91-92: | World Civilizations..... | 6 |
| Hist 71-72: | Introduction to American History..... | 6 |
| P Sc 5-6: | Introduction to Political Science..... | 6 |
| Other Courses: | To be selected from the following..... | 6 |
| Anth 1-2: | Introductory Anthropology | |
| Geog 51: | Introduction to Geography | |
| Geog 52: | World Regions | |
| Soc 1-2: | Introductory Sociology | |
| *Other Courses: | Second-group courses, as approved by the adviser, from Anthropology, Economics, Geography, History, Political Science, and Sociology..... | 12 |

Total..... 42

Spanish

| | | |
|----------------|---|---|
| Span 9-10: | Spanish Conversation and Composition, or | |
| Span 12: | Spanish Conversation and Composition (Intensive)..... | 6 |
| Span 51-52: | Survey of Spanish Literature and Civilization..... | 6 |
| Span 103: | Pronunciation and Intonation..... | 3 |
| Span 109-10: | Advanced Spanish Conversation and Composition | 6 |
| Span 125-26: | Modern Spanish Literature..... | 6 |
| Span 127-28: | Contemporary Spanish Literature..... | 6 |
| Span: | Additional Spanish courses as approved | 6 |
| Other Courses: | Recommended from the following but not required..... | 6 |
| Engl 125: | Introduction to English Linguistics | |
| Foreign Lang: | Other than Spanish as approved | |
| Hist 162: | History of Spain and Portugal | |
| Hist 163-64: | History of Latin America | |
| Hist 165: | History of Brazil | |
| Hist 166: | History of Mexico | |
| Psyc 115: | Psychology of Language and Communication | |
| Span 121-22: | Spanish Literature of the Golden Age | |
| Span 123-24: | Cervantes: Don Quijote | |
| Span 151-52: | The Spanish American Novel | |
| Span 155-56: | Spanish American Literature to 1880 | |
| Span 157-58: | Spanish American Literature since 1880 | |

Total..... 39-45

* Not required for the minor teaching field.

Special Education***GROUP 1: MENTAL RETARDATION**

| | Semester Hours |
|--|-------------------|
| S Ed 201: Introduction to the Education of Exceptional Children... | 3 |
| S Ed 202: Nature and Needs of the Mentally Retarded..... | 3 |
| S Ed 203: Teaching Mentally Retarded Children..... | 3 |
| S Ed 251: Psychosocial Considerations in Special Education..... | 3 |
| S Ed 290: Practicum in Teaching the Mentally Retarded..... | 6 |
| Total..... | 18 |

GROUP 2: EMOTIONAL DISTURBANCE

| | |
|---|-----------|
| S Ed 240: Educational Programming for Children with Behavioral Problems | 3 |
| S Ed 242: Clinical Teaching of Emotionally Disturbed Children..... | 3 |
| S Ed 243: Clinical Teaching Laboratory..... | 3 |
| S Ed 291: Practicum in Teaching the Mentally Retarded..... | 6 |
| S Ed 370: Intrapersonal Dynamics in Special Education..... | 3 |
| Total..... | 18 |

Speech and Drama

| | |
|---|-----------|
| Sp&D 1: Effective Speaking..... | 3 |
| Sp&D 2: Persuasive Speaking..... | 3 |
| Sp&D 11: Voice and Diction..... | 3 |
| Sp&D 32: Oral Reading | 3 |
| Sp&D 101: Phonetics | 3 |
| Sp&D 121: Group Discussion and Conference Leadership..... | 3 |
| Sp&D 153: Acting | 3 |
| Sp&D 171: Introduction to Speech Pathology and Audiology..... | 3 |
| Area of Specialization: Selected from one of the following groups as approved by the adviser..... | 12 |
| Total..... | 36 |

†GROUP 1: SPEECH

| | |
|---|--|
| Sp&D 102: Oral Interpretation of Literature | |
| Sp&D 126: Public Discussion and Debate | |
| Sp&D 127-28: Advanced Debate Practice | |
| Sp&D 141: Public Speaking: Advanced Forms | |
| Sp&D 172: Speech Pathology I | |
| Sp&D 173: Speech Pathology II | |
| Sp&D 176: Speech, Hearing, and Language Development | |
| Sp&D 182: Introduction to Audiology | |

* Minor teaching field only. Either Group 1 or Group 2 may be elected as a minor teaching field by Secondary Education majors or as an area of specialization by Elementary Education majors.

† Not required for the minor teaching field.

***GROUP 2: DRAMA**

- Sp&D 102: Oral Interpretation of Literature
 Sp&D 133-34: Radio and TV Broadcasting
 Sp&D 151: Stagecraft
 Sp&D 152: Advanced Stagecraft
 Sp&D 154: Play Direction
 Sp&D 155-56: Play Production Practice
 Sp&D 165-66: History of the Theater
 Sp&D 169: Creative Dramatics
 Sp&D 170: Children's Theater
 Other Courses: English, Psychology, or Speech and Drama as approved
 by the adviser

PROFESSIONAL EDUCATION

The basic professional information, skills, and attitudes needed by beginning teachers are provided through a sequence of courses to be taken in the junior and senior years. Lectures and class discussions are closely coordinated with field work. Instruction is differentiated to meet the needs of those preparing to teach on the various levels—elementary school, junior high school, senior high school, and adult.

Professional Courses—Secondary

| | Semester Hours |
|---|-------------------|
| Educ 108: Human Development, Learning, and Teaching..... | 3 |
| Educ 112: Educational Measurement, or Stat 53: Introduction to Statistics in Psychology and Education..... | 3 |
| Educ 123: Society and the School..... | 3 |
| Educ 131: Secondary School Principles and Methods..... | 3 |
| Educ 134: Student Teaching in Secondary Schools..... | 6-9 |
| Special Methods: Three to six semester hours from the following courses... | 3-6 |
| Educ 136: Teaching English in Secondary Schools | |
| Educ 137: Teaching Speech | |
| Educ 138: Teaching Social Studies in Secondary Schools | |
| Educ 139: Teaching Art in Secondary Schools | |
| Educ 140: Teaching Mathematics in Secondary Schools | |
| Educ 141: Teaching Latin | |
| Educ 142: Teaching Music in Secondary Schools | |
| Educ 144: Teaching Science in Secondary Schools | |
| Educ 146: Teaching Foreign Languages | |
| Total..... | 21-27 |

Professional Courses—Elementary

| | |
|---|----|
| Educ 108: Human Development, Learning, and Teaching..... | 3 |
| Educ 111: Elementary School Curriculum and Methods..... | 15 |
| Educ 112: Educational Measurement, or Stat 53: Introduction to Statistics in Psychology and Education..... | 3 |
| Educ 123: Society and the School..... | 3 |
| Educ 135: Student Teaching in Elementary Schools..... | 9 |
| Total..... | 33 |

* Not required for the minor teaching field.

BACHELOR OF SCIENCE IN PHYSICAL EDUCATION*

These curricula, which are designed to prepare students for teaching in elementary and secondary school programs of physical education, offer opportunities for specialization in dance, elementary school physical education, and special physical education.

The student wishing to prepare to teach another subject in addition to physical education may use his elective hours to work toward a minor teaching field. Relevant work in Columbian College may be counted.

The minimum requirement for the Bachelor of Science in Physical Education degree is 66 semester hours.

PREREQUISITE

For the first two years of the Bachelor of Science in Physical Education curricula, see Columbian College of Arts and Sciences, pages 78-79.

CURRICULUM FOR MEN**Junior Year**

| | Semester Hours |
|--|-------------------|
| B Sc 163: Human Physiology..... | 4 |
| Educ 108: Human Development, Learning, and Teaching..... | 3 |
| Educ 123: Society and the School..... | 3 |
| PE 105: Special Physical Education..... | 3 |
| PE 107: Teaching Recreational Dance..... | 1 |
| PE 113-14: Practice in Teaching Physical Education Activities..... | 6 |
| PE 121: School and Community Health Programs..... | 3 |
| PE 122: Methods and Materials for Health Education..... | 3 |
| PE 158: Safety Education..... | 3 |
| Elective or minor teaching field: | 4 |
| Total..... | 33 |

Senior Year

| | |
|--|-----------|
| Educ 131: Secondary School Principles and Methods..... | 3 |
| Educ 134: Student Teaching in Secondary Schools..... | 6-9 |
| PE 101: Physical Education in the Elementary School..... | 3 |
| PE 103: History and Principles of Physical Education..... | 3 |
| PE 115-16: Intramural Program Organization..... | 4 |
| PE 131: Tests and Measurements in Physical Education..... | 3 |
| PE 138: Organization and Administration of Physical Education... | 3 |
| PE 164: Physiology of Exercise..... | 3 |
| Elective or minor teaching field: | 2-5 |
| Total..... | 33 |

* Physical Education may also be chosen as a minor teaching field by candidates for the degree of Bachelor of Arts in Education, see pages 110-11.

CURRICULUM FOR WOMEN

Junior Year

| | Semester Hours |
|--|-------------------|
| B Sc 163: Human Physiology..... | 4 |
| Educ 108: Human Development, Learning, and Teaching..... | 3 |
| Educ 123: Society and the School..... | 3 |
| PE 101: Physical Education in the Elementary School..... | 3 |
| PE 105: Special Physical Education..... | 3 |
| PE 107: Teaching Recreational Dance | 1 |
| PE 111-12: Teaching Physical Education Activities..... | 6 |
| PE 117: Teaching Modern Dance..... | 2 |
| PE 121: School and Community Health Programs..... | 3 |
| PE 122: Methods and Materials for Health Education..... | 3 |
| Elective or minor teaching field: | 3 |
| Total..... | 36 |

Senior Year

| | |
|--|-----|
| Educ 131: Secondary School Principles and Methods..... | 3 |
| Educ 134: Student Teaching in Secondary Schools..... | 6-9 |
| PE 103: History and Principles of Physical Education..... | 3 |
| PE 113: Practice in Teaching Physical Education Activities..... | 3 |
| PE 131: Tests and Measurements in Physical Education..... | 3 |
| PE 138: Organization and Administration of Physical Education..... | 3 |
| PE 164: Physiology of Exercise..... | 3 |
| Elective or minor teaching field: | 3-6 |
| Total..... | 30 |

The Degree of Master of Arts in Education

PROGRAMS OF STUDY LEADING TO THE DEGREE of Master of Arts in Education are designed to enable prospective teachers and teachers of experience to increase their knowledge of professional and academic information and skills and prepare for special types of educational service. They also provide opportunities for college graduates in other disciplines to acquire needed professional education, as well as study in the subjects which they are planning to teach.

From the various related departments of the University, the student and his adviser select courses to give the student an adequate background in his chosen field of service. Programs for teachers-in-service and experienced teachers planning to re-enter the profession are differentiated from those for students without teaching experience.

Master's programs are available in the following fields: (1) adult education; (2) classroom teaching; (3) comparative education; (4) curriculum; (5) early childhood education; (6) elementary administration; (7) elementary education; (8) employee development; (9) guidance; (10) history of education; (11) human growth and development; (12) philosophy of education; (13) physical education (candidates may specialize in dance, elementary school physical edu-

cation, or special physical education); (14) reading; (15) rehabilitation counseling; (16) secondary administration; (17) secondary education; (18) special education—mentally retarded, emotionally disturbed, physically handicapped, and disadvantaged; and (19) student personnel work in higher education.

For teachers interested in developing or strengthening their academic competence, the "classroom teaching" field normally permits 15 to 18 semester hours of work in departments other than education. These programs are designed to meet the needs of teachers-in-service who need additional work in content to qualify for advanced certification or to improve their classroom skills; and may also be helpful to previously trained teachers planning to re-enter the profession. The major emphasis is upon strengthening both the academic and professional competencies of the teacher.

Additional information concerning these programs may be obtained by writing or telephoning the Office of the Dean.

FIVE-YEAR PROGRAM

A candidate entering the School of Education from the lower division of Columbian College of Arts and Sciences (or with equivalent preparation) may choose a three-year program leading to the degrees of Bachelor of Arts in Education and Master of Arts in Education to be conferred simultaneously. The first year of this combined program will be devoted to teaching-field preparation; the work of the second year will include the degree of Bachelor of Arts in Education junior-year professional courses and a maximum of 18 semester hours of graduate courses; that of the third and final year, senior-year undergraduate professional courses and the remaining graduate courses needed for the Master's degree. Student Teaching, to be elected in the third year, may not be taken for graduate credit. A quality-point index of at least 2.50 in undergraduate courses must be attained before beginning the work of the senior year, and the program must meet all the requirements for the degrees of Bachelor of Arts in Education and Master of Arts in Education.

ENTRANCE REQUIREMENTS

A Bachelor's degree from an accredited institution; an undergraduate quality-point index of 2.50 or above (*C +* average); demonstrated interest in teaching; and personality traits that give promise of better-than-average success as a teacher.

Two years of successful teaching are required before admission to candidacy in the fields of guidance and school administration.

ADMISSION TO CANDIDACY

Candidates whose undergraduate preparation does not include equivalents of the basic requirements for the degree of Bachelor of Arts in Education must make up deficiencies and may be required to take designated tests.

ADVANCED STANDING

For the record, advanced standing is granted for approved courses taken at other accredited institutions, but a minimum of 30 semester hours must be completed at this University as a Master's candidate.

A maximum of 12 semester hours of advanced courses completed in this University in excess of the requirements for the Bachelor's degree may be credited toward the Master's degree if the work fits in with the student's plan of specialization and is approved in writing by the Dean before being undertaken.

Advanced standing is not granted for work completed five or more years before application for admission or readmission to Master's candidacy.

REQUIREMENTS FOR THE DEGREE

PLAN OF STUDY

The plan of study leading to the degree of Master of Arts in Education requires a minimum of 33 hours of graduate credit. The plan may, at the student's option, include a thesis carrying 6 hours of graduate credit. Whether or not a student selects the thesis option, a minimum of 18 hours, including a course in educational research methods and procedures, must be from courses planned primarily for graduate students (third-group courses). A minimum of 12 hours, not including the thesis or the research course, must be from courses offered by the School of Education.

Programs may include additional teaching-field preparation. In such cases, however, undergraduate and graduate courses combined must be at least equivalent to the undergraduate requirements for the degree of Bachelor of Arts in Education (see pages 102-14).

Programs are planned initially in conference with an admission adviser in the Office of the School of Education and subsequently with a designated adviser in the candidate's area of specialization. These programs are based on the interests of the candidate, his previous background, and the certification requirements of the state and locality in which the candidate plans to teach.

All degree requirements must be completed within a period of six years.

RESIDENCE

The satisfactory completion of 30 semester hours as a candidate for the degree is required. With the approval of the adviser, 9 of the 30 hours may be off-campus courses in the College of General Studies.

SCHOLARSHIP

For graduate work grades are indicated as: *A*, excellent; *B*, good; *C*, minimum pass; *F*, fail; *I*, incomplete; *W*, authorized withdrawal; *CR*, credit. Grades *A*, *B*, *C*, and *F* are counted in computing the quality-point index (see page 44).

A quality-point index of 3.00 is required for graduation. Students who receive the grade of *C* in more than two courses are subject to suspension. Students who receive a grade of *F* must confer with the Dean of the School of Education before enrollment for further work.

Whenever a grade has not been assigned, the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the Dean's Council. An incomplete which is not removed within one calendar year is automatically changed to an *F*. An incomplete cannot be removed by reregistering for the course.

THE THESIS

The choice of the thesis subject must be approved in writing by the student's adviser and filed in the Office of the Dean. A statement of the School of Education standards for the thesis and printed copies of detailed regulations regarding the form and reproduction of the thesis are available in the Office of the Dean.

Payment of tuition for the thesis entitles the candidate, during the period of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional calendar year may be granted without further tuition payment. The student must, however, maintain continuous registration (see page 47) during this period. If the preparation of the thesis extends beyond the additional calendar year, the student must register for the entire 6 hours of thesis again and pay tuition as for a repeated course.

MASTER'S COMPREHENSIVE EXAMINATION

In addition to the course examinations, the candidate must pass a special three-hour examination on his area of specialization. Candidates for the examination must be registered for the semester it is to be taken, and must file a written application in the Office of the School of Education no later than thirty days prior to the date of the examination.

The Degree of Education Specialist

THE SCHOOL OF EDUCATION PROVIDES A PROGRAM of advanced study leading to the degree of Education Specialist for students with Master's degrees in Education who seek further professional preparation for specific objectives.

ENTRANCE REQUIREMENTS

The degree of Master of Arts in Education from this University, or the equivalent; a satisfactory score on the Miller Analogies Test or the Graduate Record Examination; and two years of successful pertinent experience is required.

ADMISSION TO CANDIDACY

Each applicant must be interviewed and recommended by a staff member of the School of Education or by a representative in the candidate's locality appointed by the Dean.

SCHOLARSHIP

Scholarship requirements for the degree of Education Specialist are the same as those for the degree of Master of Arts in Education (see pages 118-19).

PROGRAMS OF STUDY AND DEGREE REQUIREMENTS

Individual programs are developed, through the faculty-adviser plan, to fit the candidates' abilities, interests, needs, and career goals. Thirty semester hours beyond the requirements of the degree of Master of Arts in Education at this University are required. At least 21 hours of this work must be taken on campus at this University. A maximum of five calendar years is allowed for completion of the program.

At least 12 of the required 30 hours must be in appropriate graduate courses in Education selected from the following areas: (1) foundations and cognate study, (2) background and general principles of the field of study, (3) an area of specialization.

THE COMPREHENSIVE EXAMINATION

Successful completion of two three-hour written examinations is required.

THE ORAL EXAMINATION

The final oral examination must be passed at least three weeks before the degree is to be conferred. The examination committee consists of members of the staff of the School of Education and at least one successful practitioner in the appropriate area of specialization, appointed by the Dean of the School of Education.

The Degree of Doctor of Education

THE SCHOOL OF EDUCATION OFFERS PROGRAMS of advanced study leading to the degree of Doctor of Education. These programs, which are under the supervision of the Committee on Graduate Studies, provide major fields of study in administration and supervision, adult education, curriculum, elementary administration, elementary education, employee development, guidance and counseling, history of education, philosophy of education, secondary administration, secondary education, special education, and teacher education. Supporting fields are available in administrative specialties, higher education, human growth and development, rehabilitation counseling, and student personnel work in higher education. With the approval of the Committee on Graduate Studies and of the departments concerned, one or two supporting fields may be taken in other departments of the University. All programs require study of interrelated areas of education and a doctoral dissertation in the major field of study.

ADMISSION

The applicant must have adequate preparation for advanced study, including graduate work in fields prerequisite to his objective equivalent to that required

for the degree of Master of Arts in Education at this University, at least three years of successful pertinent educational experience, acceptable personal qualities, and a capacity for creative scholarship and effective leadership.

The applicant first arranges for an interview with the Assistant Dean for advanced graduate studies to explore his needs in relation to the resources of the School and to guide him in his application for doctoral study.

To be admitted to study for the degree, the applicant must be accepted by the Committee on Graduate Studies on the basis of previous scholastic and professional record; prescribed admission tests, including the Aptitude Test of the Graduate Record Examination or the Miller Analogies Test; personal conferences with at least three faculty members, including the professor under whom the applicant wishes to work; and a group interview with the Committee on Graduate Studies. When the applicant meets with the Committee on Graduate Studies, he should be prepared to present an outline of his plan of study, including the selection of major and supporting fields.

PLAN OF STUDY

In general, from two to three years of full-time study beyond the degree of Master of Arts in Education, or the equivalent in part-time study, is required. Programs are individually planned. It is estimated that, for the average student, the work required for the total program will be 66 semester hours.

Each program is divided into two parts. The first consists of preparation for comprehensive examinations in a major field of study and each of four supporting fields, and the completion of a tool-subject requirement. The second is composed of research investigation, the writing of a dissertation, and the final oral examination.

Students who have completed the comprehensive examinations and who were not registered for doctoral study under the payment plan in effect prior to July 1, 1967, are required to register for minimum hour-loads as follows: full-time students must register for a minimum of 12 semester hours a semester until 24 hours have been completed, and a minimum of 3 semester hours a semester thereafter until the satisfactory completion of the final examination; part-time students must register for a minimum of 6 semester hours a semester until 24 hours have been completed, and a minimum of 3 semester hours thereafter until the satisfactory completion of the final examination.

COMPREHENSIVE EXAMINATIONS

When the student is admitted to doctoral candidacy, he is assigned to a committee, each member of which is responsible for guiding him in his preparation for one of the four required comprehensive examinations in supporting fields or the comprehensive major field examination. The candidate must arrange individual conferences with the committee members to determine the content of each field and to receive guidance in his preparation for the examination. All candidates are required to complete Education 296 during the first or second semester of candidacy.

The supporting field examinations, which are taken first, are six-hour written examinations. A tool-subject requirement may be established by the candidate's Dissertation Committee if it is necessary for the successful completion of his dissertation. This requirement must be completed prior to the major field

examination. The major field examination is a written twelve-hour examination, six hours on each of two successive days.

The candidate begins the second part of his program after the satisfactory completion of all supporting field examinations; the tool subject, if required; and the major field examination.

THE DISSERTATION

A dissertation is required as evidence of ability to perform scholarly research and to interpret and present its results.

During the first part of the program, the Dean appoints a Dissertation Committee, consisting of a Master in Research, usually the major field adviser, and two additional faculty members who serve as readers. The candidate is required to submit a proposal for his dissertation to this Committee, which determines its acceptability and recommends approval to the Committee on Graduate Studies. The dissertation is completed under the direction of the Dissertation Committee.

No later than the date specified in the calendar, the candidate must submit to the Dean three complete copies of the dissertation and two copies of an abstract for inclusion in the announcement of the examination and for reproduction by University Microfilms, Inc. Printed copies of detailed regulations regarding the form and reproduction of the dissertation, preparation of the abstract, and services offered by University Microfilms, Inc., are available in the Office of the Dean. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the abstract of dissertation, and for the basic service rendered by University Microfilms, Inc.

THE FINAL EXAMINATION

When the dissertation has been accepted, the Master in Research recommends the candidate to the Dean for the final oral examination, which must be passed at least three weeks before the degree is to be conferred. The examination is open to the public and is conducted by a committee of the Faculty, appointed by the Dean, supplemented by at least two leaders in the candidate's field of study from outside the University. Candidates who successfully pass the oral examination are recommended for the degree by the Faculty of the School of Education.

RESIDENCE AND CONTINUOUS STUDY

All the preparation for the degree, including examinations and work other than courses and seminars, which is done under the direction of an adviser, must be done in residence. The student must remain registered in the School of Education, except when the Dean or the Committee on Graduate Studies has granted a leave of absence. Failure to register each semester of the academic year may result in lapse of candidacy. Subsequent readmission is subject to whatever new conditions and regulations have been established by the Committee on Graduate Studies.

There is no formal regulation concerning the minimum amount of time to be spent in preparation for the minor and supporting field examinations or as a

candidate engaged in doctoral research. The supporting and major field examinations, however, must be completed within five years of the date of admission, and the entire program must be completed within eight years, regardless of full-time or part-time study. Each candidate is required to complete one semester or more of his program in full-time study. Full-time study of six weeks or more in each of two Summer Sessions is equivalent to full-time study for one semester.

Special Programs and Services

MASTER OF ARTS IN TEACHING PROGRAM IN ELEMENTARY EDUCATION

THE SCHOOL OF EDUCATION OFFERS AN INTENSIVE fifth-year program, partially supported by paid teaching internships, designed to prepare outstanding graduates of accredited liberal arts colleges for teaching in elementary schools. Successful fulfillment of the program's requirements provides the professional courses necessary for certification as an elementary teacher. Students may receive the degree of Master of Arts in Teaching on completion of the program or receive credit for 15 semester hours of graduate work toward the degree of Master of Arts in Education.

For details, write to Program Director, M.A.T. Program in Elementary Education, George Washington University, Washington, D.C. 20006.

ADMISSION TO THE PROGRAM

To be admitted as a student-intern, an applicant must (1) have a Bachelor's degree from an accredited liberal arts institution, including courses related to the general education requirements for teacher certification; (2) show evidence of interest in children and a sincere desire to teach; (3) submit three written references attesting to quality of academic record and personality; (4) submit a score on the Aptitude Test of the Graduate Record Examination or the Miller Analogies Test; and (5) be interviewed by the University Selection Committee, or under arrangements specified by the Committee and approved by the Dean of the School of Education.

PLAN OF STUDY

The program of study begins with a six-week summer session and continues through the first twelve weeks of the fall semester. Course work during this time is planned to help each student gain understanding of (1) the characteristics of elementary school children, (2) the subject-matter areas of the elementary school curriculum, (3) basic dimensions of teaching methodology, (4) the relationship between educational theory and methods, (5) educational tests and measurements, and (6) the role of the school in American society.

During six weeks of the fall semester, students will be given full-time student teaching assignments in a nearby public school. This part of the program will permit the student to use, in an actual teaching situation, the educational theories and methods which he has been studying. It is accompanied by a weekly on-campus seminar.

A salaried internship during the spring semester in one of the cooperating school systems in the area gives the student an opportunity to assume the responsibilities of a beginning teacher, with the help and guidance of University and public school staff members. Seminar meetings will be scheduled weekly for discussion of common problems and for cooperatively planned work on individual and group needs of interns.

EDUCATION OF TEACHERS OF EXCEPTIONAL CHILDREN

The School of Education offers a program for the education of teachers of exceptional children who are mentally retarded, emotionally disturbed, crippled or otherwise health impaired, and culturally disadvantaged. Laboratory experiences are arranged in schools for handicapped children in the metropolitan area. Students are accepted at the junior- or senior-year undergraduate, Master's, Education Specialist, and Doctoral levels. By special permission, teachers, school administrators, and adequately prepared students from other schools and colleges of the University may elect these courses.

Inquiries concerning the program and the availability of scholarships and fellowships should be directed to Dr. Perry Botwin, Department of Special Education, George Washington University, Washington, D.C. 20006.

CERTIFICATION CURRICULA

The School of Education provides individually planned programs for liberal arts graduates and for housewives and retired military personnel with appropriate degrees who wish to prepare for teaching. Those seeking certification, but not wishing to work for a degree, may enroll in a certification program if they meet the admission, scholarship, and personality requirements of degree candidates. The School also provides a wide range of courses of interest to teachers who wish to renew licenses.

READING CENTER (see pages 52-53)



SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION

Dean J.C. Dockeray
Assistant Dean for Special Projects E.J.B. Lewis

FACULTY

Professors H.F. Bright, D.S. Brown, D.R. Cloutier, J.C. Dockeray, R.B. Eastin, R.F. Ericson, F.H. Gibbs, Leon Gintzig, Roy Herrmann (*Visiting*), J.L. Jessup, E.J.B. Lewis, G.L. Lippitt, H.R. Page, D.D. Roman, S.M. Rosen (*Visiting*), Waldo Sommers, K.E. Stromsem, Edwin Timbers

Adjunct Professor J.L. Intermaggio

Associate Professors G.R. Allen, Lloyd Bartholomew, Guy Black, H.C. De-moody, Rodney Eldridge, P.D. Grub, R.F. Hartley, R.L. Holland, C.D. Hughes, F.C. Kurtz, E.R. Magruder, A.J. Mastro, J.F. McCarthy, Jr., D.C. McGrath, Jr., E.J. Mock, J.H. Norton, Chei-Min Paik, J.R. Rizzo, R.C. Sedwick, T.E. Shaughnessy, J.N. Stonesifer, M.M. Wofsey

Assistant Professors Elizabeth Adams, R.A. Barrett, S.R. Chitwood, G.F. Conner, P.M. Dickie, M.G. Gallagher, H.E. Green (*Research*), Sherwin Greene, R.A. Jydstrup, G.P. Lauter, T.F. Riley, J.R. Roman, Jr., S.N. Sherman, L.C. Smith, W.E. Smith, J.L. Thompson, Jr., J.W. Waldrip

Instructors J.R. Glennie, L.W. Katz

COMMITTEES*

DEAN'S COUNCIL

J.C. Dockeray (*Chairman*), Leon Gintzig, P.D. Grub, E.J.B. Lewis, H.R. Page, L.C. Smith, K.E. Stromsem

COMMITTEE ON CURRICULUM

R.A. Barrett (*Chairman*), D.R. Cloutier, Leon Gintzig, F.C. Kurtz, E.R. Magruder, J.F. McCarthy, Jr.

COMMITTEE ON DOCTORAL STUDIES IN BUSINESS ADMINISTRATION AND PUBLIC ADMINISTRATION

D.D. Roman (*Chairman*), Guy Black, D.R. Cloutier, Leon Gintzig, E.H. Johnson, Chei-Min Paik, S.M. Rosen

* The Dean of the School is an ex officio member of all committees.

COUNCIL*

The School of Government and Business Administration Council operates as an advisory group on policy, finance, and community relations. It consists of responsible members of the business and government communities, and of the faculty, administrators, and students of the School.

CHAIRMAN

August Schomburg, *Lieutenant General, USA (Ret.)*

MEMBERS OF THE COUNCIL

- Everett H. Bellows, *Vice President, Staff Services Metals Division, Olin Mathieson Chemical Corporation, New York, N.Y.*
 Leo M. Bernstein, *President, District of Columbia National Bank*
 David Springer Brown, *Professor of Management*
 Carl William Clewlow, *Deputy Assistant Secretary of Defense for Civilian Personnel Policy, Department of Defense*
 Sheldon Stanley Cohen, *formerly Commissioner, Internal Revenue Service*
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 Leon Gintzig, *Professor of Health Care Administration*
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 Robert P. Thome, *Comptroller, The Washington Post Company, Washington, D.C.*
 James Otis Wright, *(University Trustee), President and Chief Executive Officer, Federal-Mogul Corporation, Detroit, Mich.*

* The President of the University, the Chairman of the Board of Trustees, the Vice President for Academic Affairs, the Vice President for Resources, and the Dean of the School of Government and Business Administration are ex officio members of the Council.

STUDENT MEMBERS OF THE COUNCIL

Stanley K. Moseley
Thomas E. Richards

INTRODUCTION

The study of Government was first organized as a separate entity in the University in 1898 with the establishment of the School of Comparative Jurisprudence and Diplomacy. In 1928, this School was reorganized and broadened as the School of Government. During the next two decades, programs in business administration and public administration were added, and the emphasis gradually shifted from undergraduate to graduate study. The name was changed in 1960 to the School of Government, Business, and International Affairs to reflect more accurately the offerings of the School. A division of the School was effected in 1966, and two schools were established—the School of Government and Business Administration, a primarily professionally-oriented school; and the School of Public and International Affairs, a primarily policy-oriented school.

Programs of the School of Government and Business Administration include examination of administrative principles and the quantitative approaches to decision making common to both business and government. These programs stress the points at which major policy decisions of either business or government must give consideration to related policy decisions of the other. Emphasis is placed upon the fact that management education is not limited to organizational techniques but is, in its broadest sense, education for management responsibility.

Students in the freshman and sophomore years are registered in the lower division of Columbian College of Arts and Sciences, the liberal arts college of the University. Here they are assigned special advisers from this School to assist them in planning their programs.

ACADEMIC PROGRAMS

Programs in the fields of Accounting, Business Administration, Business and Economic Statistics, Health Care Administration, International Business, Personnel Administration, Public Administration, and Urban and Regional Planning are all available within the School of Government and Business Administration.

ACADEMIC STATUS

The School of Government and Business Administration has maintained full membership in the Middle Atlantic Association of Colleges of Business Administration since 1961. It joined the Council on Graduate Education for Public Administration in 1966. By invitation, in 1968, the School became a charter academic member of the American Association of Collegiate Schools of Business Assembly. The programs in Public Accounting designed to prepare students for Certified Public Accountants examinations have been approved by the state boards of New York and of Maryland. The program in Hospital Administration has been accredited by the Association of University Programs in Hospital Administration since 1962.

REGULATIONS

Regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES are stated on pages 23-33; other University regulations, on pages 43-50.

ATTENDANCE

A student may not attend classes until registration is completed and fees due are paid. A student may be dropped from any course for undue absence.

The student is held responsible for all the work of the courses in which he is registered, and all absences must be excused by the instructor in charge before provision is made for him to make up the work missed.

A student suspended for any cause may not attend classes during the period of suspension.

INDEPENDENT STUDY PLAN

A student of *demonstrated capacity*, with a special interest in the subject matter of a course, may be permitted to undertake study under the personal direction of an instructor, in accordance with the rules of the appropriate department. Credit under this plan is limited to the specific course credits normally allowed when taken on a class basis.

Bachelor of Business Administration

THE SCHOOL OFFERS PROGRAMS leading to the degree of Bachelor of Business Administration in the fields of Accounting, Business Administration, Business and Economic Statistics, and International Business.

ENTRANCE REQUIREMENTS

The satisfactory completion of the *Accounting, Business Administration, and International Business* or the *Business and Economic Statistics* curriculum in the lower division of Columbian College of Arts and Sciences (see pages 79-80) or the equivalent is required. Students transferring from other colleges and universities as juniors must offer an acceptable broad-based liberal arts program, or the equivalent.

REQUIREMENTS FOR THE DEGREE**ACADEMIC WORK LOAD**

A full-time student not on probation may not ordinarily take more than 12 semester hours. A student employed more than 24 hours a week, who is not on probation, may not take more than 9 semester hours.

A full-time student whose quality-point index is 3.50 or higher may take not more than 18 semester hours. A student employed more than 24 hours a week, whose index is 3.50 or higher, may take up to 12 semester hours.

A student who accepts employment after registration or at any time during a semester must report immediately to the Dean, so that his program may be adjusted if necessary.

Exception to these rules will require the approval of the Dean.

SCHOLARSHIP

In order to graduate, a student must have the following: (1) a general quality-point index of at least 2.00 and (2) an index in his major of at least 2.50. The major includes the required courses and courses taken in the group options.

DEAN'S HONOR LIST

The names of students who achieve a quality-point index of 3.50 or higher are placed on the Dean's Honor List for that semester. Appearance on the List will be limited to (1) full-time students registered for a minimum of 12 semester hours and (2) part-time students registered for a minimum of 12 semester hours over a period of two consecutive semesters, which may include a summer term.

PROBATION

A student whose quality-point index falls below 2.00 after completing a minimum of 12 semester hours of study, will be placed on probation. This probation extends over the period in which the student attempts 12 semester hours of work which may include remedial studies as prescribed.

SUSPENSION

A student whose quality-point index is 1.50 or below or whose index remains below 2.00 at the end of his probationary period may be suspended. A student suspended for poor scholarship may apply for readmission after the lapse of either the fall or spring semester. To be considered for readmission, he must pass prescribed tests and submit evidence to the Dean's Council that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student readmitted after suspension is on probation and must maintain a current quality-point index of at least 2.50 on each 12 semester hours of work undertaken until his cumulative index is 2.00. In no case will the probationary period after readmission exceed 24 hours of study. A student suspended twice for poor scholarship will not be readmitted.

RESIDENCE

A minimum of 30 semester hours, including at least 12 hours in the major field, must be completed while registered in the School of Government and Business Administration. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work may be counted toward the residence requirement, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in the School of Government and Business Administration.

USE OF CORRECT ENGLISH

Any student whose written or spoken English in any course is unsatisfactory may be reported by the instructor to the Dean. The Dean may assign supplementary work, without academic credit, varying in amount with the needs of

the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the Dean.

CREDIT/NO CREDIT OPTION (see pages 44-45)

CORRESPONDENCE AND HOME-STUDY COURSES

Credit for correspondence or home-study courses is not acceptable and cannot be applied toward a degree.

CURRICULUM REQUIREMENTS

To be recommended by the Faculty for graduation, candidates are required to complete, in addition to the appropriate freshman and sophomore work, a minimum of 60 semester hours during the junior and senior years, as set forth in one of the following curricula.

EXAMINATIONS FOR WAIVING CURRICULUM REQUIREMENTS

A required course may be waived by the satisfactory passing of a waiver examination authorized and prescribed by the department or curriculum adviser concerned. Passing this examination does not entitle the student to any hours of credit toward the degree. Request to take the examination should be made to the curriculum adviser and the required fee paid at the Office of the Cashier before the date set for the examination.

MAJOR FIELDS FOR THE BACHELOR'S DEGREE

Candidates for the degree of Bachelor of Business Administration must have completed the requirements of the Columbian College of Arts and Sciences Lower Division in the relevant curriculum: Accounting, Business Administration, and International Business, page 79; Business and Economic Statistics, page 80; or the equivalent.

ACCOUNTING

For the first two years of the Accounting curriculum, see page 79.

Programs are offered in three areas of professional specialization: (1) Managerial Accounting in Business; (2) Federal Financial Management—Accounting and Budgeting; and (3) Public Accounting.

Required—Junior and Senior Years

| | Semester Hours |
|---|-------------------|
| Acct 101: Cost Accounting | 3 |
| Acct 121-22: Intermediate Accounting | 6 |
| Acct 161: Federal Income Taxation | 3 |
| Acct 171: Auditing | 3 |
| B Ad 102: Fundamentals of Management | 3 |
| B Ad 131: Business Finance | 3 |
| B Ad 161: Commercial Law: Contracts, Sales, Agency, Bailments.... | 3 |

| | Semester Hours |
|--|-------------------|
| B Ad 162: Commercial Law: Negotiable Instruments, Property, Mortgages | 3 |
| Econ 121: Money and Banking..... | 3 |
| Area of Professional Specialization: | 15 |
| Elective: To be selected in consultation with the adviser at the beginning of the junior year..... | 15 |
| Total..... | 60 |

All Accounting majors must complete the *required* courses listed above, plus one of the following 15 semester-hour areas of professional specialization. Special programs and elective courses may be arranged in consultation with the Department of Accounting.

GROUP I: MANAGERIAL ACCOUNTING IN BUSINESS

Students preparing for careers in managerial accounting in business may specialize in a particular area of accounting, such as systems, budgeting, or income tax, or may concentrate on broadening their backgrounds in business administration or in more general fields of knowledge. The Managerial Accounting program thus provides maximum flexibility for students who wish to combine basic training in accounting with other career interests, in preparation either for general business responsibilities or in preparation for more specific careers in the financial management field.

Courses relating to Managerial Accounting to be selected with the approval of the adviser (may not include Accounting courses in excess of 9 hours).

GROUP II: FEDERAL FINANCIAL MANAGEMENT—ACCOUNTING AND BUDGETING

Students preparing for careers in financial management in the Federal Government may combine basic professional training in accounting with more specialized training in the financial management techniques used in administering the complex affairs of modern-day government. A flexible program can be developed in keeping with the specific career objectives of the individual student by the careful selection of electives.

Courses relating to Federal Financial Management to be selected with approval of the adviser (may not include Accounting courses in excess of 9 hours).

GROUP III: PUBLIC ACCOUNTING

The Public Accounting program is a concentrated professional curriculum designed to prepare students for careers in public accounting. It combines the maximum number of professional accounting courses consistent with the broad educational background essential to successful accounting careers in the modern business world.

Courses relating to Public Accounting to be selected with approval of the adviser.

BUSINESS ADMINISTRATION

For the first two years of the Business Administration curriculum, see page 79.

The program in Business Administration is designed to provide the broad foundation required for eventual top leadership in either governmental or business administration. It consists of the 30 semester hours of *required* courses;

15 hours in one of the following group options; and 15 hours of electives, normally advanced courses in liberal arts subjects.

Required—Junior and Senior Years

| | Semester Hours |
|---|-------------------|
| Acct 193: Business Budgeting | 3 |
| B Ad 102: Fundamentals of Management..... | 3 |
| B Ad 105: Personnel Management | 3 |
| B Ad 131: Business Finance | 3 |
| B Ad 141: Basic Marketing Management | 3 |
| B Ad 161: Commercial Law: Contracts, Sales, Agency, Bailments.... | 3 |
| B Ad 162: Commercial Law: Negotiable Instruments, Property, Mortgages | 3 |
| B Ad 191: Business Reports and Analyses..... | 3 |
| B Ad 198: Case Problems in Management..... | 3 |
| Econ 121: Money and Banking..... | 3 |
| Group Option: To be selected from one of the following groups..... | 15 |
| Elective: To be selected in consultation with the adviser..... | 15 |
| Total..... | 60 |

GROUP OPTIONS

Seven areas of specialization are open to Business Administration majors. The 15 hours taken in each of these options require the approval of the adviser. The group option and the individual courses within the option should be selected *no later than the beginning of the second semester of the junior year.*

GROUP I: AUTOMATIC DATA PROCESSING

The following courses provide the basic academic foundation for positions in data processing in government, business, and industry. They also give the student an understanding of the manager's use of data processing as a vital managerial technique.

- B Ad 118: Introduction to Data Processing
- B Ad 119: Data Processing Programming
- B Ad 120: Data Processing Systems
- Stat 111, 112: Business and Economic Statistics I, II

GROUP II: ECONOMICS

The following courses provide the basic academic foundation for such positions as financial economic analyst, industrial economic analyst, and market research analyst in business and government.

- B Ad 132: International Business Finance
- B Ad 133: Capital Formation
- B Ad 176: International Business Theory and Policy
- *Econ 101: Intermediate Microeconomic Theory
- *Econ 102: Intermediate Macroeconomic Theory
- Econ 158: Industrial Organization
- Econ 161, 162: Public Finance I, II
- Econ 181-82: International Economics
- Stat 111, 112: Business and Economic Statistics I, II

* Required for this group option.

GROUP III: FINANCE

The following courses provide the basic academic foundation for such positions as credit analyst, supervisor in a financial institution, bond cashier, trust officer, bank examiner, and similar positions in federal or international financial institutions.

- *Acct 111: Financial Statement Analysis
- Acct 121-22: Intermediate Accounting
- B Ad 113: Real Estate
- B Ad 118: Introduction to Data Processing
- B Ad 121: Fundamentals of Insurance
- B Ad 122: Insurance Estate Planning
- B Ad 132: International Business Finance
- B Ad 133: Capital Formation
- B Ad 135: Managerial Finance
- *B Ad 138: Investment and Portfolio Management
- B Ad 163: Law in Relation to the Form of Business Units:
Corporations, Partnerships, and Trusts
- Econ 101: Intermediate Microeconomic Theory

GROUP IV: MARKETING

The following courses provide the basic academic foundation for such positions as sales manager, marketing manager, product development manager, research director, buyer, advertising director, sales promotion manager, and credit manager.

- B Ad 142: Retail Marketing
- *B Ad 143: Marketing Research
- B Ad 144: International Marketing Management
- *B Ad 145: Sales Management
- B Ad 147: Advertising
- B Ad 158: Physical Distribution Management
- B Ad 171: Principles of Transportation
- B Ad 175: Introduction to Foreign Trade
- B Ad 177: Foreign Markets
- B Ad 178: Management of International Business Operations
- B Ad 181: Manufacturing Production

GROUP V: PERSONNEL MANAGEMENT

The following courses provide the basic academic foundation for such positions as personnel manager, employee relations manager, and employment manager in business and government service.

- *B Ad 106: Problems in Personnel Management
- *B Ad 107: Collective Bargaining
- B Ad 118: Introduction to Data Processing
- Jour 145: Principles and Problems of Public Relations
- Psyc 129: Motivational Factors in Personality
- Psyc 131: Psychological Tests
- Psyc 144: Personnel and Industrial Psychology
- Sp&D 121: Group Discussion and Conference Leadership

* Required for this group option.

GROUP VI: STATISTICS

The following courses provide the basic academic foundation for such positions as financial statistician, planning statistician, industrial statistician, and rate analyst in business and government.

- B Ad 118: Introduction to Data Processing
- Stat 91: Principles of Statistical Methods
- Stat 110: Quality Control and Reliability Techniques
- *Stat 111, 112: Business and Economic Statistics I, II
- Stat 117: Analysis of Variance
- Stat 118: Regression Analysis
- Stat 155: Introduction to Probability
- Stat 157-58: Introduction to Mathematical Statistics

GROUP VII: TRANSPORTATION AND TRAFFIC MANAGEMENT

The following courses provide the basic academic foundation for management positions in transportation firms and in traffic departments of other types of business firms and government agencies. The program should also aid in the preparation for the examinations for membership in the American Society of Traffic and Transportation.

- B Ad 113: Real Estate
- B Ad 158: Physical Distribution Management
- *B Ad 171: Principles of Transportation
- B Ad 172: Public Utilities
- *B Ad 173: Transportation Systems Management
- B Ad 174: Urban Transportation
- *B Ad 175: Introduction to Foreign Trade
- CE 183: Urban Planning
- CE 194: Design Projects
- Geog 125: Transportation Geography

BUSINESS AND ECONOMIC STATISTICS

For the first two years of the Business and Economic Statistics curriculum, see page 80.

The undergraduate program in Business and Economic Statistics is designed as preparation for business and economic analysis. It consists of 30 semester hours of *required* courses and 30 hours of electives from Accounting, Business Administration, Economics, and Statistics.

Required—Junior and Senior Years

| | Semester Hours |
|---|-------------------|
| B Ad 102: Fundamentals of Management..... | 3 |
| B Ad 131: Business Finance, or | |
| B Ad 141: Basic Marketing Management..... | 3 |
| B Ad 161: Commercial Law: Contracts, Sales, Agency, Bailments... | 3 |
| B Ad 162: Commercial Law: Negotiable Instruments, Property, Mortgages | 3 |
| B Ad 191: Business Reports and Analyses..... | 3 |
| Econ 101: Intermediate Microeconomic Theory..... | 3 |
| Econ 102: Intermediate Macroeconomic Theory..... | |

* Required for this group option.

| | Semester Hours |
|--|-------------------|
| Stat 111, 112: Business and Economic Statistics I, II..... | 6 |
| Elective (A): To be selected from Statistics..... | 18 |
| Elective (B): To be selected in consultation with the adviser..... | 15 |
| Total..... | 60 |

INTERNATIONAL BUSINESS

For the first two years of the International Business curriculum, see page 79.

This program is designed to provide the basic academic foundation for positions in international business, both in private industry and in government. It consists of 30 semester hours of *required* course work and 30 hours of electives. Any modification of the program must be made with the consent of the adviser.

Required—Junior and Senior Years

| | Semester Hours |
|---|-------------------|
| B Ad 102: Fundamentals of Management..... | 3 |
| B Ad 131: Business Finance | 3 |
| B Ad 132: International Business Finance..... | 3 |
| B Ad 141: Basic Marketing Management..... | 3 |
| B Ad 144: International Marketing Management..... | 3 |
| B Ad 161: Commercial Law: Contracts, Sales, Agency, Bailments.... | 3 |
| B Ad 175: Introduction to Foreign Trade..... | 3 |
| B Ad 176: International Business Theory and Policy..... | 3 |
| B Ad 178: Management of International Business Operations..... | 3 |
| Econ 121: Money and Banking..... | 3 |
| Elective: The 30 hours of elective courses should be selected, in consultation with the adviser, from Accounting, Business Administration, Economics, Geography and Regional Science, Political Science, Sociology, Statistics, or any modern foreign language; however, up to 9 semester hours of courses in other approved areas may be substituted with the permission of the adviser..... | 30 |
| Total..... | 60 |

The Master's Degrees

Master of Business Administration

PROGRAMS LEADING TO THE DEGREE of Master of Business Administration are offered in the following fields:

Accounting
Business Administration
Health Care Administration

International Business
Personnel Administration

Master of Public Administration

Programs leading to the degree of Master of Public Administration are offered in the following fields:

| | |
|----------------------------|-----------------------------|
| Health Care Administration | Public Administration |
| Personnel Administration | Urban and Regional Planning |

Master of Urban and Regional Planning

This program leads to the professional planning degree of Master of Urban and Regional Planning.

Master of Arts in Government

Programs leading to the degree of Master of Arts in Government are offered in the following fields:

| | |
|----------------------------------|-----------------------------|
| Business and Economic Statistics | Public Administration |
| Personnel Administration | Urban and Regional Planning |

Master of Arts in Health Care Administration

Programs leading to the degree of Master of Arts in Health Care Administration are offered in various aspects of Health Care Administration.

ENTRANCE REQUIREMENTS

A Bachelor's degree from an accredited college or university, with a quality-point index of 3.00 (a *B* average) in the relevant undergraduate field, is required.

Students who lack sufficient undergraduate study in business or related fields may be required to make up these deficiencies by taking specified undergraduate courses and maintaining a 3.00 average in those courses. In the case of mature students with extensive experience in relevant fields, work experience may be considered in addition to the scholastic record of the individual, to reach an acceptable standard for admission to graduate study.

MASTER OF BUSINESS ADMINISTRATION

Applicants for admission to programs leading to the degree of Master of Business Administration must submit scores on the Admission Test for Graduate Study in Business administered by the Educational Testing Service.

MASTER OF PUBLIC ADMINISTRATION

Applicants for admission to programs leading to the degree of Master of Public Administration must submit scores on the Admission Test for Graduate Study in Business or the Graduate Record Examination administered by the Educational Testing Service.

MASTER OF URBAN AND REGIONAL PLANNING

Applicants for admission to programs leading to the degree of Master of Urban and Regional Planning must submit scores on the Admission Test for Graduate Study in Business or the Graduate Record Examination administered by the Educational Testing Service.

MASTER OF ARTS IN GOVERNMENT

Applicants for admission to programs leading to the degree of Master of Arts in Government must submit scores on the Admission Test for Graduate Study in Business or the Graduate Record Examination administered by the Educational Testing Service.

MASTER OF ARTS IN HEALTH CARE ADMINISTRATION

Applicants for admission to programs leading to the degree of Master of Arts in Health Care Administration must submit scores on the Admission Test for Graduate Study in Business or the Graduate Record Examination administered by the Educational Testing Service.

ADMISSION TESTS ARRANGEMENTS

Arrangement for required tests is the responsibility of the applicant and should be made with the Educational Testing Service, Princeton, N.J. 08540. Correspondence concerning the Admission Test for Graduate Study in Business should be addressed to Box 966; concerning the Graduate Record Examination, to Box 955.

GENERAL REQUIREMENTS

A program of greater length, including undergraduate background courses, may be assigned for an applicant whose undergraduate degree was in a field other than the graduate program he wishes to follow, or whose undergraduate record indicates a weakness in required background courses.

Master's degrees are awarded by vote of the Faculty on completion of the required course work, an acceptable thesis or the equivalent, and the passing of the Master's Comprehensive Examination. An applicant whose background does not include the necessary courses must take a program longer than the minimum hours required.

Second-group courses (numbered 101-200) may be counted toward the Master's degree, only when registration for graduate credit has been approved at the time of registration by the Dean and the curriculum adviser. No work counted toward a Bachelor's degree may also be counted toward a Master's degree.

Full-time students are normally expected to register for 9 to 12 semester hours each semester. All work for a Master's degree must be completed in five years, unless an extension of time is granted by the Dean.

A student who expects to continue his studies for the degree of Doctor of Business Administration or Doctor of Public Administration after receiving the Master's degree should ask for assistance in planning his program so that he may qualify for admission to candidacy for the Doctorate.

No credit is granted for work done *in absentia* or without formal instruction, except for hospital residency, supervised field experience, and the thesis, which may be completed *in absentia* with the permission of the department, curriculum adviser, or committee concerned.

MASTER'S COMPREHENSIVE EXAMINATION

In addition to individual course examinations the candidate must pass a general written Master's Comprehensive Examination. In writing the examination the student is expected to correlate what he has learned in his course work and his reading in the literature of his fields. The examination normally requires from seven to nine hours writing time. Sections broadly cover the various fields in which the candidate has prepared himself.

The examinations are scheduled two times a year, in December and April, and should be taken during the last semester of course registration or shortly after completion of the prescribed course work. If there is a lapse of time between completion of course work and the taking of the examination, the student must maintain continuous registration and must be registered for the semester in which the examination is taken.

The candidate should consult with his adviser, well in advance, as to the dates of his examination and the definition of the subject-matter fields which his examination is to cover. A written application is filed, in the form prescribed, with the Office of the Dean no later than thirty days prior to the examination.

A candidate who fails the examination may, in exceptional circumstances and with specific approval of his advisers, repeat the examination, but only after the lapse of one semester and the undertaking of additional preparation as prescribed. *If he fails a second time, no further opportunity to take the examination will be permitted.*

SCHOLARSHIP

Grades for graduate work are *A*, excellent; *B*, good; *C*, minimum pass; *F*, fail; *I*, incomplete; *W*, authorized withdrawal; and *CR*, credit.

An average of *B* or better is required for the Master's degree. The grade of *C* is not considered as failing but must be counter-balanced by a grade of *A* in a graduate course of equal status.

A Master's candidate who receives a grade of *F* is required to present cause for consideration by the Dean's Council as to why he should be allowed to continue his studies.

Whenever a grade has not been assigned, the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the Dean's Council. An incomplete which is not removed within one calendar year is automatically changed to an *F*. An incomplete cannot be removed by reregistering for the course.

REQUIRED COURSES IN ADMINISTRATION (Certain Fields)

The following courses in general administrative theory and practice are required of all candidates for the degree of Master of Public Administration and Master

of Business Administration, except in the field of Accounting. They are also required of candidates for the degree of Master of Arts in Government in the field of Personnel Administration.

| | Semester Hours |
|---|-------------------|
| B&PA 201: Advanced Administrative Management..... | 3 |
| B&PA 204: Quantitative Factors in Administration..... | 3 |
| B&PA 207: Human Behavior in Organizations..... | 3 |

In addition, each student is normally required to take, from the following group, the course appropriate to his specific area of concentration:

| | Semester Hours |
|--|-------------------|
| B Ad 257: Operation of the Multinational Firm..... | 3 |
| B Ad 297: Case Studies in Business Administration..... | 3 |
| HCA 206: Case Studies in Health Care Administration..... | 3 |
| P Ad 298: Case Studies in Public Administration..... | 3 |

THE THESIS

The thesis subject should be selected as early as possible so as to permit effective integration with the course work.

The subject must be approved by the professor in charge of the student's field. The thesis in its final form must have the approval of the professor in charge and must be presented to the Dean by the student no later than the date announced in the calendar. Printed copies of detailed regulations regarding the form and reproduction of the thesis are available in the Office of the Dean.

Payment of tuition for the thesis entitles the candidate, during the two semesters he registers for thesis (299-300), to the advice and direction of the members of the Faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year is granted without further tuition payment. The student must, however, maintain continuous registration during this period. If the preparation of the thesis extends more than three semesters beyond the date he registers for thesis 300, the student must register for the entire 6 hours of thesis again and pay tuition as for a repeated course.

MASTER OF BUSINESS ADMINISTRATION

Curricula leading to the professional degree of Master of Business Administration are available in the fields of Accounting, Business Administration, Health Care Administration, International Business, and Personnel Administration.

The purpose of the programs leading to the degree of Master of Business Administration is to develop the analytical ability and perspective which will contribute to success as a responsible executive. Because of the increasingly close relationship between government and business, these programs also provide an excellent background for many government careers. To provide maximum flexibility, each student program is planned with an assigned faculty adviser.

An applicant must have a Bachelor's degree from an accredited college or university.

The degree is awarded by vote of the Faculty upon satisfactory passing of the Master's Comprehensive Examination, and the submission of an acceptable

thesis. The complete program consists of 60 semester hours, 54 hours of course work and 6 of thesis. A student who has completed an undergraduate major in accounting or in business administration with a good record *may qualify* under a minimum acceptable program of 30 hours, including the thesis. No more than 6 hours of graduate course credits can be transferred from other accredited institutions, and each transfer of credit must be approved by the Dean.

The Master's Comprehensive Examination should ordinarily not be taken before the last semester of course work.

ACCOUNTING

The Master's programs in Accounting are designed (1) for those who wish to pursue careers as professional accountants, (2) for those who wish to pursue careers of executive responsibility with emphasis on finance and accounting in either business or government, and (3) for those who wish to pursue careers as teachers of accounting. Programs are sufficiently flexible to meet individual student objectives; selection of courses is made in consultation with the adviser. The programs are available in three basic areas, professional accounting, governmental accounting, and managerial accounting.

BUSINESS ADMINISTRATION

The Master's programs in Business Administration are designed for those who wish to pursue responsible careers as administrators in either government or business.

Individual programs are planned in consultation with the adviser to fit the professional objectives of the student. The course work must include the *required* courses in administration (see pages 138-39). Fields of study include administrative theory and practice (required), behavioral factors in administration, managerial economics, business-government relations, business statistics, data processing, finance and investments, international business, managerial accounting, marketing, operations research and systems analysis, personnel management, procurement and contracting, research and development management, and transportation.

HEALTH CARE ADMINISTRATION

The programs in Health Care Administration lead to the degrees of Master of Arts in Health Care Administration, Master of Business Administration, or Master of Public Administration. Study in depth may be made in various aspects of Health Care Administration found in short-term hospitals, long-term health facilities (such as extended care institutions, nursing homes, mental hospitals, facilities for the aged), group practice clinics, health information systems, and comprehensive health planning agencies. The basic curriculum for the degree of Master of Arts in Health Care Administration is developed in keeping with the background and professional goals of each student and ordinarily consists of 45 semester hours of course work; in no instance will the minimum be less than 36 semester hours plus supervised field experience. The basic curriculum for the Master of Business Administration and Master of Public Administration programs, which include the *required* courses in administration (see pages 138-39), consists of from 45 to 60 semester hours, includ-

ing 9 semester hours of residency, depending upon the background and experience of each student.

Ordinarily full-time students can expect to complete the on-campus phase of the degree program in two to four semesters over a period of one to two academic years. The total time depends on the past academic course work and experience background in the health care field.

HOSPITAL ADMINISTRATION

The program in Hospital Administration is divided into two phases. During the first phase the student must complete a satisfactory academic program of course work, selected in accordance with his background and needs. These courses cover the general and technical background of hospital administration, general administrative theory and practice, and problem solving in the area of management as it relates to short-term hospitals. The second phase is a calendar year of either on-the-job residency* under qualified administrative supervision or supervised field experience, for which the student receives up to 9 semester hours of academic credit. A written major report is required as part of phase two.

ADMINISTRATION OF LONG-TERM CARE FACILITIES

The concentration in the Administration of Long-term Care Facilities is designed to prepare students for the administration of facilities for the aged, extended care facilities, and mental hospitals.

During the first phase the student must complete a satisfactory academic program of course work, selected in accordance with his background and needs. These courses cover the general technical background of hospital administration, general administrative theory and practice, and problem solving in the management of long-term care facilities. The second phase is a calendar year of either on-the-job residency* under a qualified administrative supervisor or supervised field experience, for which the student receives up to 9 semester hours of academic credit. A written major report is required as part of phase two.

HEALTH INFORMATION SYSTEMS

The concentration in Health Information Systems recognizes the rapidly growing demand for individuals who can develop and implement the use of computer-based information systems in decision-making approaches. It is designed to prepare those who wish to supervise and coordinate data collection, processing, and retrievable activities for health care complexes.

During the first phase the student must complete a satisfactory academic program of course work, selected in accordance with his background and needs. These courses cover the general and technical background of hospital administration and general administrative theory and practice. In addition required courses in computer services and information handling must be included. The second phase is a calendar year of either on-the-job residency* under a qualified administrative supervisor or supervised field experience in one or more health care facilities, for which the student receives up to 9 semester hours of academic credit. A written major report is required as part of phase two.

* In selected cases, a combined residency can be arranged in more than a single concentration.

INTERNATIONAL BUSINESS

The Master's program in International Business is designed to prepare students for careers in firms operating on a multinational basis or about to enter the international field; for careers in the Federal Government and in international agencies concerned with business, industry, and finance abroad; and for the Commerce option of the Foreign Service Officer Examination.

This program is also designed to prepare foreign students with the background and skills necessary to promote international business, for careers in foreign and domestic firms within their own countries and for commercial officer positions within their governments.

Each student's program is individually developed by the student's adviser according to the student's background and interests, and includes the *required courses in administration* (see pages 138-39).

PERSONNEL ADMINISTRATION

The program in Personnel Administration leads to the degree of Master of Business Administration (if elective emphasis is directed toward Business Administration), to the degree of Master of Public Administration (if elective emphasis is directed toward Public Administration), or to the degree of Master of Arts in Government.

The course work must include the *required courses in administration*, pages 138-39, and the thesis (Business Administration 299-300 or Public Administration 299-300). Each student's program is arranged in consultation with a curriculum adviser.

MASTER OF PUBLIC ADMINISTRATION

Curricula leading to the professional degree of Master of Public Administration are available in the fields of Health Care Administration, Personnel Administration, Public Administration, and Urban and Regional Planning.

PUBLIC ADMINISTRATION

This program provides a course of study appropriate for those students currently in government or with appreciable past experience in government, or those with other than an undergraduate social science degree. The degree of Master of Public Administration is a professional degree, preparing graduates for positions of higher responsibility in the public service and generally improving their competence in public employment. Work done for this degree may lead directly toward the degree of Doctor of Public Administration.

The degree is awarded by vote of the Faculty upon satisfactory passing of the Master's Comprehensive Examination and the submission of an acceptable thesis. The academic program ranges from 36 to 60 semester hours, depending upon the background and experience of each student. Six semester hours in the program represent major research and preparation of a thesis. Students who have strong undergraduate backgrounds in political science, history, economics, business administration, sociology, or psychology, or who have had appropriate career experience closely related to such fields, will ordinarily require a minimum amount of course work to qualify for the degree. Each student develops an individual program in consultation with his faculty adviser to prepare for the Master's Comprehensive Examination.

No more than 6 hours of graduate credit can be transferred from other accredited institutions, and any transfer of credit must be approved by the Dean.

The course work for the degree of Master of Public Administration must include the *required* courses in administration, pages 138-39. Other courses are selected, with the approval of the adviser, to prepare the student for the Master's Comprehensive Examination, which covers three fields of study. The field of administrative theory and practice is required of all students. The other two fields may be chosen from administration in the Federal Government, comparative and development administration, data processing and systems management, government-business relations, health care administration, human behavior in organizations, international administration and trade, metropolitan administration and urban affairs, public financial management and budgeting, public personnel administration, regional planning, urban planning and design, and closely related management and social science fields.

A thesis, which may be a major case study, is prepared under the guidance of an approved director.

HEALTH CARE ADMINISTRATION

The programs in Health Care Administration are described on pages 140-41, and lead to the degree of Master of Arts in Health Care Administration, Master of Business Administration, or Master of Public Administration.

PERSONNEL ADMINISTRATION

The program in Personnel Administration leads to the degree of Master of Public Administration (if elective emphasis is directed toward Public Administration), to the degree of Master of Business Administration (if elective emphasis is directed toward Business Administration), or to the degree of Master of Arts in Government.

The course work must include the *required* courses in administration, pages 138-39, and the thesis (Public Administration 299-300 or Business Administration 299-300). Each individual student's program is arranged in consultation with a curriculum adviser.

URBAN AND REGIONAL PLANNING

The program in Urban and Regional Planning is designed to provide an introduction to planning theory and methodology for students who are working toward the degree of Master of Public Administration. The standards for the program are similar to those for the Public Administration curriculum outlined on pages 142-43. The student is expected to include public administration, federal or metropolitan, as an integral part of his studies. With the counseling of an adviser, each program is individually planned in accordance with the interest and goal of the student.

MASTER OF URBAN AND REGIONAL PLANNING

The program of graduate study in Urban and Regional Planning leads to the professional planning degree of Master of Urban and Regional Planning. It is designed as preparation for careers on the municipal, county, state, and national levels, and for private professional practice. The course of study is de-

signed to provide a broad professional education, to develop competence in planning and methodology, and to emphasize the analytical ability and creativity necessary for solving urban and regional problems. Each student's program is designed in consultation with an assigned faculty adviser in accordance with his individual career plans.

The degree is awarded by vote of the Faculty after satisfactory completion of (1) from 45 to 60 semester hours of course work, depending upon the background and experience of each individual student, including a thesis equivalent to 6 semester hours (most students will ordinarily be required to take 60 semester hours); (2) a minimum of three months' full-time professional training in a planning agency under qualified supervision, with an acceptable written report to be submitted after completion of the training period; (3) the passing of a written Master's Comprehensive Examination; and (4) a thesis based on the candidate's research in the field of urban and regional planning.

MASTER OF ARTS IN GOVERNMENT

Curricula leading to the degree of Master of Arts in Government are available in the fields of Business and Economic Statistics, Personnel Administration, Public Administration, and Urban and Regional Planning.

The programs leading to this degree require a minimum of 36 semester hours of work, which includes a thesis equivalent to 6 semester hours.

Second-group courses (numbered 101-200) may be counted toward the Master's degree up to a maximum of 12 hours, but only when registration for graduate credit has been approved at the beginning of the course by the faculty adviser and instructor. No work counted toward a Bachelor's degree may also be counted toward a Master's degree.

BUSINESS AND ECONOMIC STATISTICS

Prerequisite: an undergraduate major in Business and Economic Statistics, or the equivalent; such work must include a minimum of 24 semester hours of second-group courses in statistics and a minimum of 10 semester hours in second-group courses in accounting, business administration, and economics.

This program requires at least 12 semester hours of graduate courses in statistics. The remaining courses are to be selected from graduate offerings in accounting, business administration, economics, public administration, and statistics with the approval of the adviser. A thesis equivalent to 6 semester hours is required.

PERSONNEL ADMINISTRATION

The program in Personnel Administration leads to the degree of Master of Arts in Government, to the degree of Master of Business Administration (if elective emphasis is directed toward Business Administration), or to the degree of Master of Public Administration (if elective emphasis is directed toward Public Administration).

The course work must include the *required courses in administration*, pages 138-39, and the thesis (Business Administration 299-300 or Public Administration 299-300). Each individual student's program is arranged in consultation with a curriculum adviser.

PUBLIC ADMINISTRATION

The program, in contrast to the professional program leading to the degree of Master of Public Administration (see pages 142-43) is designed for students who wish to emphasize the academic elements of Public Administration. It may also serve as a basis for later study toward the doctoral degree. It is a suitable degree objective for students who have just completed the Bachelor's degree.

Each student is expected to prepare himself for a Master's Comprehensive Examination, which covers three fields. The field of administration and policy formulation in government is required. The other two may be selected from such fields as comparative and developmental administration, data processing and systems management, government-business relations, human behavior in organizations, international administration and trade, metropolitan administration and urban affairs, public financial management and budgeting, public personnel administration, regional planning, and urban planning and design. Related studies may be selected from accounting, economics, geography, history, political science, psychology, and sociology.

The course work is planned with an adviser.

URBAN AND REGIONAL PLANNING

The program in Urban and Regional Planning leading to the degree of Master of Arts in Government is designed to provide planning theory and methodology for students who have an undergraduate degree in the social sciences. The student is expected to include public administration, federal or metropolitan, as an integral part of his studies, and courses in urban planning and design or regional planning. Under the counseling of an adviser, each program is individually planned in accordance with the interest and goal of the student.

MASTER OF ARTS IN HEALTH CARE ADMINISTRATION

Curricula leading to the degree of Master of Arts in Health Care Administration are available with concentrations in Hospital Administration, Administration of Long-term Care Facilities, Health Information Systems, and Comprehensive Health Planning.

HOSPITAL ADMINISTRATION

The concentration in Hospital Administration is described on page 141, and leads to the degree of Master of Arts in Health Care Administration, Master of Business Administration, or Master of Public Administration.

ADMINISTRATION OF LONG-TERM CARE FACILITIES

The concentration in Administration of Long-term Care Facilities is described on page 141, and leads to the degree of Master of Arts in Health Care Administration, Master of Business Administration, or Master of Public Administration.

HEALTH INFORMATION SYSTEMS

The concentration in Health Information Systems is described on page 141, and leads to the degree of Master of Arts in Health Care Administration, Master of Business Administration, or Master of Public Administration.

COMPREHENSIVE HEALTH PLANNING

The concentration in Comprehensive Health Planning leads to the degree of Master of Arts in Health Care Administration. This program is designed to prepare students to plan for and coordinate all aspects of private and public health care systems in accordance with sound management principles. It is an interdisciplinary program, and includes course offerings in the areas of environmental health, medical care organization, sociology, and urban and regional planning.

The first phase of the program consists of the required courses in health care administration, plus required courses in comprehensive health planning. The second phase consists of supervised field experience. A written major report is required as part of phase two.

Graduate Certificate in Health Care Administration

STUDENTS WITH APPROVED MASTER'S DEGREES from accredited institutions may take a special post-Master's program leading to a Graduate Certificate in Health Care Administration. Each program will be planned to meet the professional needs of the individual student whether he wishes to undertake a new field of study or to amplify his knowledge of work done at the Master's level.

This program permits study in depth of such areas as health care administration consulting; comprehensive health planning; government health care administration at federal, state, and county levels; long-term care administration, including mental hospitals, nursing homes, and facilities for the aged; and health care administration research.

Prerequisite: a Master's degree from an accredited college or university and an academic average which indicates the ability to undertake advanced study. The applicant is also judged on his experience, character, and personality. Applicants lacking formal study in health care administration are required to take qualifying courses.

REQUIREMENTS FOR THE CERTIFICATE

Students with adequate preparation in the health care field can complete the requirements with a minimum of 18 semester hours of approved graduate study. Those lacking such specialized study or equivalent experience will usually need to complete a minimum of 30 semester hours. At the discretion of the student's advisory committee a maximum of 6 semester hours may be transferred from another accredited institution if the work was taken for credit toward a graduate degree.

PROGRAM OF STUDIES

Health Care Administration 270 *Research in Health Care Administration* is required of all candidates for the Certificate. The remaining courses consist of a program of study worked out in consultation with a faculty adviser and planned with consideration of the student's educational and experience background and his specific professional objectives.

Doctoral Study

WORK FOR THE DEGREES of Doctor of Business Administration and Doctor of Public Administration is under the supervision of the Committee on Doctoral Studies.

ADMISSION

Completed application forms must be sent to the Office of the Admissions Officer, the School of Government and Business Administration, George Washington University, Washington, D.C. 20006. The applicant should ask three individuals, who are acquainted with his ability to do high-level academic work, to write directly to the Chairman of the Committee on Doctoral Studies. These letters of reference should be on special forms which will be provided by the Committee Chairman. Applicants for the degree of Doctor of Business Administration must file results of the Admission Test for Graduate Study in Business with the Office of the Admissions Officer before final approval of their applications can be given. Applicants for the degree of Doctor of Public Administration must submit results of either the Admission Test for Graduate Study in Business or the Graduate Record Examination to the Office of the Admissions Officer. These tests must have been taken within the past five years. Arrangements to take these tests must be made with the Educational Testing Service, 20 Nassau Street, Princeton, N.J. 08540; or 1947 Center Street, Berkeley, Calif. 94704.

An applicant must have a degree of Master of Business Administration or Master of Public Administration, as appropriate; or a Master of Arts degree in an approved field; or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. Each applicant must demonstrate his competence by qualifying examinations.

PLAN OF STUDY

The Chairman of the Committee on Doctoral Studies, in consultation with the applicant, will (1) designate fields of study selected from such areas as Business Administration, Economics, Health Care Administration, International Business, Public Administration, Political Science, and Urban and Regional Planning; and (2) appoint an adviser to guide the student in his work in these fields. Most students will complete, prior to the General Examination, a minimum of 30 semester hours in graduate courses and such additional course work as may be prescribed by the adviser; but, the exact content of each program is determined in light of the student's background and competence after consultation with the appropriate faculty member in each of the fields undertaken.

Full-time students are normally expected to register for 9 to 12 semester hours each semester. All work for the Doctor's degree must be completed in five years unless an extension of time is granted by the Committee on Doctoral Studies prior to the expiration of the time limit. All course work must be taken on campus unless otherwise approved in advance by the Dean.

When the applicant has satisfied his adviser and the Committee of his readiness to take the General Examination in the fields of study previously desig-

nated, the examination will be scheduled during the following February or October.

Upon successful completion of the General Examination and approval of the subject of the doctoral dissertation, the student may be admitted to candidacy by the Committee on Doctoral Studies. The candidate's research and the preparation of his dissertation are supervised by a Research Adviser designated by the Committee.

After admission to candidacy, the student must register for 24 hours of *Dissertation Research* (399). Full-time students must register for 9 to 12 hours a semester for 2 semesters, and for sufficient hours in the third semester to complete the 24-hour requirement. Part-time students must register for 6 semester hours a semester for 4 semesters. If the dissertation has not been completed during the time the student has registered for the required 24 hours, he must register for 3 semester hours of *Dissertation Research* (399) each succeeding semester until the satisfactory completion of the dissertation and the final oral examination.

THE DISSERTATION

A dissertation is required as evidence of ability to perform scholarly research and to interpret and present its results.

No later than the date specified in the calendar the candidate must submit to the Dean three complete copies of the dissertation and an original copy of an abstract of his dissertation for inclusion in the announcement of the examination and for reproduction by University Microfilms, Inc.

Printed copies of detailed regulations regarding the form and reproduction of the dissertation, preparation of the abstract, and services offered by University Microfilms, Inc., are available in the Office of the Dean. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the abstract of his dissertation, and for the basic service rendered by University Microfilms, Inc.

THE FINAL EXAMINATION

The Final Examination of the candidate consists of his oral defense of the dissertation. The examination will be given by a committee appointed by the Committee on Doctoral Studies. Upon successful completion of this oral examination the candidate will be approved for the degree of Doctor of Business Administration or Doctor of Public Administration by the Committee on Doctoral Studies.

RESIDENCE

The Committee on Doctoral Studies expects all students to remain registered until all degree requirements are satisfied, although there is no formal regulation concerning the minimum amount of time of study either in preparation for the General Examination or as a doctoral candidate engaged in research. The student who undertakes either part of the doctoral program on full or limited schedule must maintain "continuous registration" under the School of Government and Business Administration even when he is granted a leave of absence for study or residence elsewhere. By failing to register for one semester

or more, the student breaks his registration and must apply for readmission to the School under whatever new conditions and regulations are set up by the Committee or the member of the Faculty who directs his research. The student who has completed his tuition requirements, but whose graduation is deferred for any reason, must maintain continuous registration by paying the continuous registration fee for the semester immediately preceding the graduation at which he expects to receive his degree.

Special Programs

GOVERNMENT MANAGEMENT INTERN SCHOLARSHIP PROGRAM

THE GOVERNMENT MANAGEMENT INTERN SCHOLARSHIP PROGRAM offers annually fifty scholarships to assist federal agencies in training carefully selected young men and women for administrative leadership in government career service. Each scholarship provides a tuition-free course of 3 hours a semester and appropriate academic credit (up to 6 semester hours) for the successful completion of training assignments required in any agency whose training program has been approved for this purpose by the University.

NAVY GRADUATE FINANCIAL MANAGEMENT PROGRAM

The Navy Graduate Financial Management Program, sponsored by the Naval Postgraduate School, provides 50 semester hours of work in financial management and related fields for a selected group of Naval and Marine officers. The Master of Business Administration degree is awarded upon successful completion of this full-year program.

GRADUATE PROGRAMS AT SENIOR SERVICE COLLEGES

The School of Government and Business Administration cooperates with the College of General Studies in the off-campus programs of that College, particularly in the fields of accounting, business administration, financial management, governmental administration, and personnel administration. A special program leading to the degree of Master of Science in Business Administration has been established by the College of General Studies in cooperation with the School of Government and Business Administration for students and faculty of the Industrial College of the Armed Forces, Fort McNair, Washington, D.C.

COOPERATIVE PROGRAM IN URBAN AFFAIRS WITH VIRGINIA POLYTECHNIC INSTITUTE

A Washington Program in Urban Studies was instituted in the fall semester of 1964 in cooperation with the faculty of Urban and Regional Planning of the College of Architecture of Virginia Polytechnic Institute. Under this program a faculty member and a group of students from VPI live and study at The George Washington University during the fall semester each year. The program consists of lectures and seminars in addition to studio problems, studies in housing, urban design, intergovernmental relations, and urban renewal. Courses offered under this program are available to students majoring in metropolitan

administration and urban affairs and in urban and regional planning. Students desiring to participate in this program should consult with their advisers or the Chairman of the Department of Urban and Regional Planning.

CONTINUING EDUCATION IN HEALTH CARE ADMINISTRATION

A nondegree program is conducted in the various areas of health care administration both on campus and off campus whenever a sufficiently large class is organized. Institutes, workshops, and lecture series are conducted under the auspices of program faculty and selected leaders from local, state, and regional areas on topics of current interest to the requesting organization. No specific prerequisite is required. Fees are to be announced.

THE INTERNATIONAL INSTITUTE FOR HEALTH CARE ADMINISTRATION

In recognition of special educational needs of students from other countries, The International Institute for Health Care Administration offers programs of instruction designed to meet these requirements either at degree or certificate level.

It is also equipped to enter into arrangements with principals of hospital systems in world-wide areas to assist in the preparation of teaching programs, or the actual instruction of administrative personnel either abroad or at the University.

THE MANAGEMENT RESEARCH GROUP

The Management Research Group seeks to serve government and industry and commerce by contributing to the development and understanding of basic theory in the field of management. The Group also provides assistance in translating theory into practice.

Relationships and techniques important to modern information flow and managerial decision making are stressed. The research conducted extends to system design, analysis of system performance, and the evaluation of practice in relation to managerial criteria.

CERTIFICATION OF CHARTERED LIFE UNDERWRITERS

The Department of Business Administration cooperates with the District of Columbia Chapter of the Chartered Life Underwriters in sponsoring courses designed to prepare candidates for certificate examination. Inquiries should be addressed to the Chairman of the Educational Committee, District of Columbia Chapter, CLU, Suite 1020, 1100 Vermont Avenue, N.W., Washington, D.C. 20005; or telephone: 223-4000.

CERTIFICATION OF PUBLIC PURCHASING AGENTS

The School of Government and Business Administration participates in the National Institute of Governmental Purchasing professional certification program. Courses and examinations leading to qualification as "Certified Public Purchasing Officer" (CPPO) are provided. Inquiries may be directed to the School or to the National Institute of Governmental Purchasing, 1001 Connecticut Avenue, N.W., Washington, D.C. 20036.

OFF-CAMPUS DEGREE PROGRAMS

The School of Government and Business Administration has academic jurisdiction over off-campus programs leading to the following degrees: Bachelor of Science in General Studies with concentrations in accounting and business administration, Master of Science in Administration, and Master of Science in Business Administration.

These degree programs are administered by the College of General Studies. For details concerning the off-campus programs, see the *College of General Studies Catalogue*.





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Dean Burton Sapin

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INTRODUCTION

The study of Government was first organized as a separate entity in the University in 1898 with the establishment of the School of Comparative Jurisprudence and Diplomacy. In 1928, this School was reorganized and broadened as the School of Government. During the next two decades, programs in business administration and public administration were added, and the emphasis gradually shifted from undergraduate to graduate study. The name was changed in 1960 to the School of Government, Business, and International Affairs to reflect more accurately the offerings of the School. A division of the School was effected in 1966, and two schools were established—the School of Government and Business Administration, a primarily professionally-oriented school, and the School of Public and International Affairs, a primarily policy-oriented school.

Programs of the School of Public and International Affairs are interdisciplinary, and emphasize governmental policy, both domestic and foreign.

Students in the freshman and sophomore years are registered in the lower division of Columbian College of Arts and Sciences, the liberal arts college of the University. Here they are assigned special advisers from this School to assist them in planning their programs.

ACADEMIC PROGRAMS

Programs available within the School of Public and International Affairs are an undergraduate field in Chinese Studies and undergraduate and graduate fields in International Affairs and Public Affairs. Special programs in Soviet, Chinese, and East European studies are offered by the School's Institute for Sino-Soviet Studies.

OBJECTIVES

Each of the three undergraduate programs of study is aimed at preparing the student to understand major contemporary issues in international affairs or in domestic public affairs. The programs are designed not to produce narrow professional specialists, but to foster a liberal education, interdisciplinary in nature and broader than a concentration in one of the conventional disciplines. In each program there is a double effort: to develop a background as broad and as deep as possible in order to assist in the understanding and analysis of modern problems, and to give instruction in some useful tools of analysis.

The graduate programs leading to the degree of Master of Arts are more concentrated. The student is expected to develop a greater competence in an area or a discipline, building on his undergraduate program in preparation for professional employment in government, in international organizations, in business, or in private agencies concerned with public or international affairs.

REGULATIONS

Regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES are stated on pages 23-33; other University regulations, on pages 43-50.

ATTENDANCE

A student may not attend classes until registration is completed and fees due are paid. A student may be dropped from any course for undue absence.

The student is held responsible for all the work of the courses in which he is registered, and all absences must be excused by the instructor in charge before provision is made for him to make up the work missed.

A student suspended for any cause may not attend classes during the period of suspension.

The Degree of Bachelor of Arts

THE SCHOOL OFFERS PROGRAMS leading to the degree of Bachelor of Arts in the fields of Chinese Studies, International Affairs, and Public Affairs.

ENTRANCE REQUIREMENTS

The satisfactory completion of the *Chinese Studies and International Affairs*, or *Public Affairs* curriculum in the lower division of Columbian College of Arts and Sciences (see pages 79-80), or the equivalent, is required.

REQUIREMENTS FOR THE DEGREE

ACADEMIC WORK LOAD

A full-time student not on probation may not ordinarily take more than 15 semester hours. A student employed more than 24 hours a week, who is not on probation, may not take more than 9 semester hours.

A full-time student whose quality-point index is 3.50 or higher may take not more than 18 semester hours. A student employed more than 24 hours a week, whose index is 3.50 or higher, may take up to 12 semester hours.

A student who accepts employment after registration or at any time during a semester must report immediately to the Dean, so that his program may be adjusted if necessary.

Exception to these rules will require the approval of the Dean.

SCHOLARSHIP

In order to graduate, a student must have the following: (1) a general quality-point index of at least 2.00 and (2) an index in his major of at least 2.50. The major includes the required courses and courses taken in the group options.

DEAN'S HONOR LIST

The names of students who achieve a quality-point index of 3.50 or higher are placed on the Dean's Honor List for that semester. Appearance on the List will be limited to (1) full-time students registered for a minimum of 12 semester hours and (2) part-time students registered for a minimum of 12 semester hours over a period of two consecutive semesters, which may include a summer term.

PROBATION

A student whose quality-point index falls below 2.00 after completing a minimum of 12 semester hours of study, will be placed on probation. This probation extends over the period in which the student attempts 12 semester hours of work which may include remedial studies as prescribed.

SUSPENSION

A student whose quality-point index is 1.50 or below or whose index remains below 2.00 at the end of his probationary period may be suspended. A student who is suspended for poor scholarship may apply for readmission after the lapse of either the fall or spring semester. To be considered for readmission, he must pass prescribed tests and submit evidence to the Dean's Council that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student readmitted after suspension is on probation and must maintain a current quality-point index of at least 2.50 on each 12 semester hours of work undertaken until his cumulative index is 2.00. In no case will the probationary period after readmission exceed 24 hours of study. A student suspended twice for poor scholarship will not be readmitted.

RESIDENCE

A minimum of 30 semester hours, including at least 12 hours in the major field, must be completed while registered in the School of Public and International Affairs. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work may be counted toward the residence requirement, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in the School of Public and International Affairs.

USE OF CORRECT ENGLISH

Any student whose written or spoken English in any course is unsatisfactory may be reported by the instructor to the Dean. The Dean may assign supple-

mentary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the Dean.

CREDIT/NO CREDIT OPTION (see pages 44-45)

STUDY ABROAD

Students wishing to study abroad must consult with their advisers and the Dean, because arrangements must be made on an individual basis. Students of international affairs are encouraged to travel and study abroad.

CORRESPONDENCE AND HOME-STUDY COURSES

Credit for correspondence or home-study courses is not acceptable and cannot be applied toward a degree.

CURRICULUM REQUIREMENTS

To be recommended by the Faculty for graduation, candidates are required to complete, in addition to the appropriate freshman and sophomore work, a minimum of 60 semester hours during the junior and senior years, as set forth in one of the following curricula.

EXAMINATIONS FOR WAIVING CURRICULUM REQUIREMENTS

A required course may be waived by the satisfactory passing of a waiver examination authorized and prescribed by the department or curriculum adviser concerned. Passing this examination does not entitle the student to any hours of credit toward the degree. Request to take the examination should be made to the curriculum adviser and the required fee paid at the Office of the Cashier before the date set for the examination.

CHINESE STUDIES

The Chinese Studies program is designed to introduce the student to a non-Western culture and to provide an understanding of the history, politics, and economy of modern China. The program is interdepartmental and is recommended for students who wish a comprehensive study of one of the world's major civilizations and for those who contemplate graduate study in Chinese or Far Eastern Affairs.

All Chinese Studies majors must complete 24 semester hours of *required* courses and 36 semester hours (including electives) in one area of concentration selected from Economics, History, or Political Science (see pages 362-63).

INTERNATIONAL AFFAIRS

The International Affairs program covers international political relations, international economics, international communications, and regional studies. Its purposes are to provide an understanding of the forces operative in the contemporary world—political, economic, and social—and to give the student an

awareness of major international problems and the role of the United States as a world power.

All International Affairs majors must complete 30 semester hours of required courses (see page 363), 15 hours to be selected in consultation with the adviser from one of the following group options, and 15 hours of electives.

Group I: International Politics.—Courses concerned with theory and practice in international affairs, forces shaping the world scene, and American foreign policy.

Group II: International Economics.—Courses concerned with the world economy and American policy and practice in international trade and finance.

Group III: International Communications.—Courses concerned with the study of international information programs, public opinion, psychological warfare, cultural relations, and public relations.

Group IV: Area or Regional Studies.—Integrated programs of study on Europe, Africa, the Middle East, the Far East, the Soviet Orbit, and Latin America.

PUBLIC AFFAIRS

The Public Affairs program is a composite curriculum dealing with domestic government and policy.

All Public Affairs majors must complete 30 semester hours of required courses, 12 hours in a group option—economics, politics, or urban affairs—and 18 hours of electives (see page 363).

The Degree of Master of Arts

THIS SCHOOL OFFERS PROGRAMS leading to the degree of Master of Arts in the fields of International Affairs and Public Affairs.

ENTRANCE REQUIREMENTS

A Bachelor's degree from an accredited college or university, with a quality-point index of 3.00 (a B average) in the relevant undergraduate field, is required.

In the field of International Affairs.—The applicant's undergraduate program should include background courses corresponding to an undergraduate major in international affairs at this University.

In the field of Public Affairs.—An undergraduate major in public affairs, economics, history, or political science, depending on the field of specialization.

GENERAL REQUIREMENTS

A 3.00 average in the undergraduate major is normally required for admission to graduate study. Deficiency in undergraduate preparation may be satisfied by (1) taking specified undergraduate courses and maintaining a 3.00 average in

such courses or (2) passing a comprehensive examination in the major field. The examination may be taken only with the Dean's approval upon recommendation of the curriculum adviser.

The programs leading to the degree of Master of Arts require a minimum of 30 semester hours of work, including 24 hours of course work and a thesis equivalent to 6 semester hours. Most individual student programs exceed 30 hours, dependent upon the undergraduate major and other prerequisites.

Master's degrees are awarded by vote of the Faculty on completion of the required course work, an acceptable thesis, and the passing of the Master's Comprehensive Examination. An applicant whose background does not include the necessary courses or equivalent work experience must take a program longer than the minimum hours required.

Second-group courses (numbered 101-200) may be counted toward the Master's degree only when registration for graduate credit has been approved at the beginning of the course by the curriculum adviser. Such approval is granted only with the provision that students must complete additional work in order to receive graduate credit. No work counted toward a Bachelor's degree may also be counted toward a Master's degree.

All work for a Master's degree must be completed in five years, unless an extension of time is granted by the Dean.

No credit is granted for work done *in absentia* or without formal instruction, except for the thesis, which may be completed *in absentia* with the permission of the curriculum adviser and the Dean. No more than 6 semester hours of graduate credit may be transferred from other accredited institutions, and may be accepted only under limited conditions of time, grades, and relevance to the student's program.

A student who expects to continue his studies for the degree of Doctor of Philosophy in the field of International Relations after receiving the Master's degree in the field of International Affairs is strongly advised to plan his program from the beginning so that work for the lower degree will fit into a subsequent doctoral program in the Graduate School of Arts and Sciences (see pages 89-93, 95-97).

FOREIGN LANGUAGE REQUIREMENTS

A candidate for the degree of Master of Arts must show that he has a reading knowledge (certified by the appropriate language department) of at least one modern foreign language, to be approved by the Dean. The language examination should be taken before the student begins the second 15 hours of his work. No student may take the examination more than three times.

MASTER'S COMPREHENSIVE EXAMINATION

In addition to any course examinations the candidate must pass a written Master's Comprehensive Examination. Examinations are scheduled two times a year (usually in December and April), and should be taken during the last semester of course registration or shortly after the completion of the prescribed course work. If there is a lapse of time between completion of course work and the examination, the student must maintain "continuous registration" during this period. The candidate must consult with his adviser, well in advance,

as to the date of his examination and the definition of the subject-matter fields which this examination is to cover. An oral examination on his thesis or major report may also be required.

SCHOLARSHIP

Grades for graduate work are *A*, excellent; *B*, good; *C*, minimum pass; *F*, fail; *I*, incomplete; *W*, authorized withdrawal; and *CR*, credit.

An average of *B* or better is required for the Master's degree. The grade of *C* is not considered as failing but must be counter-balanced by a grade of *A* in a graduate course of equal status.

A Master's candidate who receives a grade of *F* is required to present cause for consideration by the Dean's Council as to why he should be allowed to continue his studies.

Whenever a grade has not been assigned, the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the Dean's Council. An incomplete which is not removed within one calendar year is automatically changed to an *F*. An incomplete cannot be removed by reregistering for the course.

THE THESIS

The thesis subject should be selected as early as possible so as to permit effective integration with the course work.

The subject must be approved by the student's adviser. The thesis in its final form must have the approval of the professor in charge and must be presented to the Dean by the student no later than the date announced in the calendar. Printed copies of detailed regulations regarding the form and reproduction of the thesis are available in the Office of the Dean.

Payment of tuition for the thesis entitles the candidate, during the period of registration, to the advice and direction of the member of the Faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional calendar year may be granted without further tuition payment. The student must, however, maintain continuous registration (see page 47) during this period. If the preparation of the thesis extends beyond the additional calendar year, the student must register for the entire 6 hours of thesis again and pay tuition as for a repeated course.

INTERNATIONAL AFFAIRS

Prerequisite: the applicant's undergraduate program should include background courses corresponding to an undergraduate major in International Affairs at this University (see page 363).

Any omission in the applicant's former program must be made up by appropriate courses in addition to the requirements for the Master's degree. The language requirement (see page 159) must be satisfied.

The Master's program in International Affairs is a flexible one, ranging from 30 to 60 hours, depending upon the background of the student. The student's

particular responsibilities will be indicated in his letter of admission to the program and in the course of subsequent consultation with a program adviser, who will be assigned and with whom the student is required to confer.

A minimum of 24 hours of third-group courses, numbered above 200, and a thesis (6 semester hours), must be included in the program. Under special circumstances, relevant undergraduate courses, numbered from 101 to 200, may be taken for graduate credit and included in the 24 hours. In each case, graduate credit will be allowed only if approval has been given by the program adviser at the time of registration for the course, and by the course instructor. The student who takes an undergraduate course for graduate credit is expected, by arrangement with the instructor, to do work at the graduate level in addition to the regular work of the course.

In addition to the satisfactory completion of his courses and the thesis, the student must pass a set of written examinations over two fields within the broad area of international affairs. The student will confer with his program adviser concerning the complete range of general and regional fields from which his two fields may be selected. One general field and one regional field constitute the usual pattern.

Graduate courses should be selected, in consultation with the adviser, with a view to their relevance to the fields in which the student expects to be examined. Course work should be understood to be only partial preparation for the field examinations, and the student is expected to pursue a program of additional reading in each of his two fields, in accordance with the advice of the instructor responsible for instruction in the field.

General Fields of Study.—The program in International Affairs offers the following general fields of study: Comparative Government and Politics; International Law, International Politics, and International Organization (including Communist International Relations); Modern Political Theory (including Socialist and Communist Theory); International Economics (including International Economic Development). Graduate courses (numbered over 200) in anthropology, business administration, economics, history, political science, psychology, and sociology relate to these fields of specialization.

Regional Fields of Study.—The regional fields include specializations in the modern history, government and politics, and the economic history and problems of Western Europe, Eastern Europe, Soviet Union, Latin America, Middle East, Sub-Saharan Africa, South Asia, Southeast Asia, Far East, and China. U.S. Diplomatic History and American Foreign Policy are also offered as regional specialties. Graduate courses (numbered over 200) in anthropology, economics, history, and political science relate to these regional fields.

Sino-Soviet Studies.—The Institute for Sino-Soviet Studies provides a program of interdisciplinary study centered on the problems of the Sino-Soviet areas and the International Communist Movement. Graduate studies under the auspices of the Institute are available to qualified students. Courses and seminars are designed to analyze the principles and problems of International Communism and to study the policies, strategies, and tactics of the major communist powers (see pages 294-99).

PUBLIC AFFAIRS

Prerequisite: an undergraduate major in public affairs, economics, history, or political science, depending upon the field of specialization. Any course de-

iciency in the undergraduate Public Affairs curriculum, as stated on page 363, must be made up.

The language requirement (see page 159) must be satisfied.

The program in Public Affairs is offered in two fields of specialization: domestic economics and domestic politics.

Recommended for domestic economics: courses in economic development, economic policy, public finance, and national income.

Recommended for domestic politics: courses in U.S. social, constitutional, and political history; comparative government; political theory; legislative organization; jurisprudence; political parties; and public opinion.

Foreign Affairs Intern Program

THE SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS in cooperation with the United States Information Agency offers a special Program of graduate studies for selected candidates, leading to the degree of Master of Arts in the field of International Affairs. The Program is designed to give persons from minority groups within the United States the opportunity of entering the Foreign Service and of undertaking careers in the United States Information Agency. It is conducted under a Ford Foundation grant to the University.

The Ford Foundation grant enables the Intern to enroll as a graduate student with full tuition and other University-related expenses taken care of. He will also receive a salary of approximately \$4,800 from the United States Information Agency for on-the-job study. The Ford grant will also provide such benefits as one round-trip travel fare to the Intern's permanent residence, subscriptions to relevant journals and publications, books on subjects related to public and international affairs, and assistance for obtaining tickets for suitable cultural events.

ADMISSION TO THE PROGRAM

Applicants must have a Bachelor's degree from an accredited college or university, preferably in a discipline related to international affairs. They must also fulfill the requirements established by law for employment in the United States Information Agency.

PLAN OF STUDY

Individuals from minority groups will be appointed Foreign Affairs Interns of the United States Information Agency and will be expected to work an average of 25 hours a week with the Agency on assignments which will prepare them for Foreign Service careers. In addition to assignments in the various geographic operation offices, they will be exposed to all the functional and operational divisions and areas, such as the Voice of America, motion picture and television, press and publications, graphic arts, research, and personnel and training functions of the Agency.

The academic program for the Master's degree consists of a minimum of 24 semester hours of graduate course work; proficiency in a modern foreign lan-

guage; the passing of the Master's Comprehensive Examination in the fields of (1) International Law, International Politics, and International Organization; and (2) American Foreign Policy; and the submission of an acceptable thesis, for which 6 semester hours of credit are granted.

Generally the Intern will satisfy his course work requirement at the rate of 9 semester hours a semester. He can elect approved courses at the other member institutions of the Consortium of Universities of the Washington Metropolitan Area, Inc.

For further information contact the Director, Foreign Affairs Intern Program, George Washington University, Washington, D.C. 20006.

Institute for Sino-Soviet Studies

GRADUATE STUDY AND RESEARCH IN COMMUNIST AFFAIRS

THE INSTITUTE FOR SINO-SOVIET STUDIES provides a program of specialized graduate study and research within the School of Public and International Affairs. Courses of the Institute are drawn from a variety of academic areas and thus provide an interdisciplinary approach to the study of the Soviet Union, Eastern Europe, the Far Eastern Communist states, and the world Communist movement. Faculty members conduct seminars and reading courses in the disciplines of economics, geography, history, law, political science, and psychology.

The Institute provides Master's and Doctoral candidates with the opportunity to combine a course program of Sino-Soviet Studies with the work in their own disciplines. It also offers a 30-semester hour program of graduate study leading to a Certificate for specialized study on the Soviet Union, China, or both, see pages 164-65.

Students who are preparing for the degree of Master of Arts in the field of International Affairs in the School of Public and International Affairs, or for the degree of Master of Arts in the field of economics, history, or political science in the Graduate School of Arts and Sciences, with a specialization in Sino-Soviet Studies, may take one-half of their course work from the Institute's program.

Students working toward the degree of Doctor of Philosophy in International Relations with special emphasis on the Sino-Soviet Area are expected to combine work in the Institute with work in the fields of economics, history, and political science. Doctoral candidates in the field of political science may combine work in the Institute with work in an appropriate number of fields within political science. All work leading to the degree of Doctor of Philosophy is under the general supervision of the Graduate School of Arts and Sciences and Consultative Committees designated by it which direct the work of each graduate student upon admission to degree candidacy. Doctoral candidates in political science and other disciplines may assume that their committees in consultation with them will arrange for an appropriate combination of fields concerned with Sino-Soviet Studies with work in other phases of their disciplines. A candidate for such a degree should assume that his committee will require the substitution of a reading examination in Chinese or Russian for one of the two Western languages normally required for the degree.

RESEARCH

Research work is integrated with the teaching program. Members of the research program belong to different disciplines and include not only faculty but also selected graduate students. Research monographs are being published by the Institute.

A special brochure describing in more detail the work of the Institute is available upon request.

INTERUNIVERSITY RESEARCH COLLOQUIA

Scholars from The George Washington University, American University, Howard University, and the University of Maryland conduct two interuniversity research colloquia. The Colloquium on Modern China is under the chairmanship of Professor Franz Michael, Associate Director of the Institute for Sino-Soviet Studies; the Colloquium on Russia and Eastern Europe is under the joint chairmanship of Professor Kurt London, Director of the Institute for Sino-Soviet Studies, and Professor Andrew Gyorgy. Research in progress undertaken by members of the colloquia and plans for future research are discussed at weekly meetings. Advanced graduate students can be admitted on approval of the chairman concerned. They receive 3 semester hours of academic credit for each semester of participation.

CERTIFICATE OF THE INSTITUTE FOR SINO-SOVIET STUDIES

The Institute for Sino-Soviet Studies offers a Certificate in Sino-Soviet Studies for students who wish evidence of the completion of specialized studies on the Soviet Union, Eastern Europe, and/or China. Candidates for advanced degrees and qualified nondegree students may apply for the Certificate upon the completion of the requirements set forth below.

ENTRANCE REQUIREMENTS

A Bachelor's degree from an accredited college or university, with a quality-point index of 3.00 (a B average) is required.

The applicant's undergraduate program should include background courses corresponding to an undergraduate major in International Affairs at this University, with emphasis on the Soviet Union and China (see page 363). Any deficiencies in the applicant's study of the Soviet Union and China must be satisfied by appropriate undergraduate courses, as specified by his adviser in addition to the requirements for the Certificate.

REQUIREMENTS FOR THE CERTIFICATE

The program consists of 30 semester hours of graduate study and the passing of a reading examination in Russian or Chinese, or both. Each program is planned in consultation with the Director of the Institute or one of his associates. Since the Institute places emphasis upon the interdisciplinary approach to study and research, the student can expect his program to include work in economics, geography, history, law, literature and culture, political systems, political theory, and psychology.

Although the student's background and prior study determine to a considerable extent his program in the Institute, intensive research in either country should run concurrently with seminars listed in the annual program of the Institute.

RESIDENCE

All of the work for the Certificate must be taken in residence in the School of Public and International Affairs, as a candidate for the Certificate; and all of the work must be completed in a maximum of three years, unless an extension of time is granted by the Dean.

War College Programs

THE SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS cooperates with the College of General Studies off-campus programs at the National and the Naval War Colleges leading to the degree of Master of Science in International Affairs. Admission is limited to selected members of the faculty and student bodies of the War Colleges.

The programs of study are complementary to the portions of the War College curricula pertaining to international relations, national strategy, and foreign policy.





DIVISION OF UNIVERSITY STUDENTS

Dean J.G. Allee, Jr.
Director of the Secondary School Honors Program, Jean Gladding

DEAN'S COUNCIL*

J.G. Boswell, A.H. Desmond, Hewitt Kenyon, J.A. Morgan, Jr.

INTRODUCTION

THE DIVISION OF UNIVERSITY STUDENTS was established in 1930 to make the regular course offerings of the University more generally available to members of this metropolitan community and others who are not at the time candidates for degrees in this University. In this Division are registered students who wish to undertake university courses for credit or as auditors. University Students, often employed in government or industry, may be taking courses to increase their vocational fitness or to inform them on new developments in the arts and sciences. They may be taking courses as a matter of personal interest for cultural enrichment. Such students may be candidates for higher degrees in other institutions, sent here for special work as part of a graduate program. They may be undergraduates, matriculated in other colleges, taking summer sessions courses only or courses for transfer during the regular academic year with the approval of their own institution. To serve members of such groups and others not enrolled in degree-granting branches of the University is the function of the Division of University Students.

The privilege of attending George Washington University as a nondegree student is granted on the basis of maturity and proper preparation. Because no degree at George Washington University is involved, there can be no meaningful advisory system in the Division. However, students are invited to seek advice from academic departments. University Students are urged to apply to the Office of Admissions for transfer to degree-granting branches whenever such action is appropriate.

All courses except those restricted to medical and law students and those limited to specific degree candidates are open to students in the Division of University Students. Students wishing to take Engineering and Applied Science courses, see the School of Engineering and Applied Science Catalogue.

Registration in a given course may be denied students in this Division when space is needed for degree candidates.

An applicant who has been denied admission to any degree-granting branch of the University will not be considered for admission to the Division of University Students for the semester for which the applicant was denied. Such an applicant may be considered in subsequent semesters.

* The Vice President for Academic Affairs, the Dean of the Division, and the Director of the Secondary School Honors Program are ex officio members of the Council.

ENTRANCE REQUIREMENTS*

Good character and an academic background appropriate for the program of studies contemplated are required.

A person not working for a degree at this University will be considered for admission to the Division of University Students to take courses for which he has adequate preparation, as determined by the departments concerned.

Scholastic records are required of

1. An applicant who graduated from high school within the previous two calendar years. Such an applicant must meet the following requirements, which are the same as those for admission to Columbian College of Arts and Sciences.
 - a) An acceptable certificate of graduation from an accredited secondary school, showing at least fifteen units† which must include four years of English; at least two years of one foreign language; two years of science, preferably with laboratory instruction; two years of social studies, one of which must be American history; and two years of college preparatory mathematics. It is to be noted that one unit of algebra, or the equivalent, is prerequisite to courses in chemistry and statistics, and that one unit in algebra and one unit in plane geometry, or the equivalent, are prerequisite to courses in mathematics and physics.
 - b) The principal's statement that the applicant is prepared to undertake college work.
 - c) College Entrance Examination Board scores must be submitted on the Scholastic Aptitude Test and the English Composition Achievement Test.
2. An applicant who has been subject to any form of academic or disciplinary action at any college or university within the previous calendar year.
3. High school students who are applying for the Secondary School Honors Program, see page 170.

Scholastic records may be required of

1. An applicant who has attended any college or university during the previous calendar year.
2. A former student of this University who was on probation or suspended and, since then, has attended another college or university.
3. An applicant who has ever been subject to academic or disciplinary action. When scholastic records are required, a student may be admitted for one semester or summer term only, pending receipt of records and under provisions stated by the Office of Admissions.

REGULATIONS

Regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES are stated on pages 23-33; other University regulations, on pages 43-50.

Prospective and registered students are urged to acquaint themselves with the regulations concerning "Attendance," see page 43, and "Withdrawal," see page 45.

* Foreign students, see pages 26-27.

† A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods, or the equivalent, of prepared classroom work.

ACADEMIC WORK LOAD

A full-time student who is not on probation may take ordinarily not more than 17 semester hours. A student employed more than 20 hours a week, who is not on probation, may take not more than 10 hours.

A full-time student whose quality-point index is 3.50 or higher may take not more than 19 hours. An employed student who meets the same standard may take not more than 12 hours.

A student who accepts employment after registration or at any time during a semester must report that fact immediately to the Dean so that his program may be adjusted, if necessary.

SCHOLARSHIP

A student who fails to maintain the scholarship requirements of this Division may be dismissed from the University.

GRADES

Undergraduate.—See page 44.

Graduate.—For graduate work, grades are indicated as *A*, excellent; *B*, good; *C*, minimum pass; *F*, fail; *I*, incomplete; *W*, authorized withdrawal; *CR*, credit.

PROBATION AND SUSPENSION

A student taking only first- and second-group courses must maintain a quality-point index of 2.00 or be placed on probation. He remains on probation as long as his index is below 2.00. If his index falls below 1.50, he is subject to suspension.

A student who has a Bachelor's degree, or its equivalent, or who is taking or has taken any third- or higher-group course must maintain a quality-point index of 2.00 in all first-group courses and 3.00 in all higher-group courses or be placed on probation. He remains on probation as long as his index is below 2.00 in first-group courses and/or 3.00 in higher-group courses. If his index falls below 1.50 in first-group courses or 2.25 in higher-group courses, he is subject to suspension. The exception to the above will be that whenever the cumulative index (combined index courses of all groups) is raised to 3.00 by grades achieved in higher-group courses the student will not be placed on probation; however, the index achieved in first-group courses cannot offset the index of the higher-group courses.

CHANGES IN PROGRAM OF STUDIES

Changes within the Division of University Students.—A student may not change or drop courses (see "Withdrawal," page 45) or change his status to that of auditor except with the approval of the Dean.

Change from one section to another of the same course may be made with the approval of the Dean and the department concerned.

Transfer within the University.—Transfer to or from the Division of University Students may be made only with the approval of the deans concerned.

Application for transfer to degree candidacy will be considered only after the completion of at least one semester in the Division of University Students.

The student currently or previously registered in this Division who wishes transfer to degree candidacy should understand that consideration will be given to only those courses which are approved as applicable toward the degree sought and that a maximum of 45 semester hours of such credits earned in this Division can be applied toward a Bachelor's degree. Upon transfer the student should consult the dean concerned and understand clearly the requirements he must fulfill.

Normally, all work toward a Master's degree must be done in residence in the degree-granting college or school. A student planning to do graduate work in the School of Education, the School of Engineering and Applied Science, the School of Government and Business Administration, or the School of Public and International Affairs should consult with the relevant degree-granting school in order to comply with the pertinent regulations concerning transfer.

A student who is enrolled in the Division of University Students or is entering that Division, and expects to transfer credit for course work toward a degree in the Graduate School of Arts and Sciences, *must* have the written approval of the department concerned and the Graduate School of Arts and Sciences prior to the completion and transfer of such credits.

SECONDARY SCHOOL HONORS PROGRAM

The outstanding secondary school student in the Washington metropolitan area who wishes to enrich his academic background and participate in stimulating college work is encouraged to seek admission to the George Washington University's Secondary School Honors Program. The Honors Student is enrolled in regular college courses of his own choosing appropriate to his level of study, his background, and his aptitude as determined through consultation with his high school counselors and advisers at the University.

Credit earned in the Program is applicable toward a degree at George Washington University should the student later matriculate here. The transfer of credit elsewhere depends upon the policies of the individual schools to which the student might later apply.

Admission to the Honors Program is highly competitive. Only 15 students a semester will be admitted in this Program, but each student will receive a scholarship totaling 50 per cent of his tuition (excluding laboratory fees). Admission is for one semester only, but students doing well will be given preference for continuation and may be readmitted for a second semester. Criteria for admission include a transcript of the student's grades to date, available test scores, evidence of emotional and intellectual maturity, and the results of the interview with the Director.

Application forms and further information may be obtained from Miss Jean M. Gladding, Director of the Secondary School Honors Program, Division of University Students, George Washington University, Washington, D.C. 20006. No applications will be considered after September 1 for the fall semester or January 1 for the spring semester. For application for the summer session see the Summer Sessions Catalogue.

THE SUMMER SESSIONS

Dean C.W. Cole

DURING THE SUMMER OF 1969, Columbian College of Arts and Sciences, the Graduate School of Arts and Sciences, the School of Engineering and Applied Science, the School of Government and Business Administration, the School of Public and International Affairs, and the Division of University Students offer courses in two 5-week sessions, with some courses and graduate seminars extending over an 8-week period; the National Law Center offers courses in two 6-week sessions and one 13-week session; the School of Education offers courses in a 6-week session and three 3-week workshop sessions. In addition, a carefully planned group of special programs will be offered on campus to serve a variety of student needs.

For a complete statement concerning summer-term work, see the *Summer Sessions Catalogue*.



PROGRAM OF POLICY STUDIES IN SCIENCE AND TECHNOLOGY

Director L.H. Mayo

THE PRIMARY OBJECTIVE of the Program of Policy Studies in Science and Technology is to encourage the continuing development of a University policy research capability directed toward the complex issues confronting society. The Program undertakes to serve as an organizing element and to provide a forum for the discussion and analysis of policy problems—current and prospective—within areas of interest and competence in the University.

Activities of the Program reflect a number of ways in which a wide range of interdisciplinary talents can be brought to bear upon the analysis of policy problems, particularly those involving a significant scientific or technological component.

By means of the Program of Policy Studies in Science and Technology, George Washington University is moving toward an institutional approach to the policy analysis function as contrasted with the highly fragmented and largely uncoordinated pattern of "institutes," "centers," and "study groups" which exists at most universities. The Program of Policy Studies concept is novel in its attempt to provide an organization that strengthens the University's ability to address itself to broad issues of public policy. This approach envisages a continuing interaction among the professional staffs of the Program of Policy Studies in Science and Technology, other policy research groups, and other faculty members of the schools and departments of the University.

The following are the primary study areas around which the Program's activities have focused:

1. The structure and functions of institutions designed to stimulate, regulate, and appraise the application of science and technology to the achievement of basic community goals, and to society's needs, national and international.
2. The application of modern Research and Development management concepts and skills to the planning, programming, and managing of social programs, with emphasis on urban problems having important technological components.

The Program has also undertaken to bring into focus the courses and seminars offered by the University which are directly related to the interface area of science, society, and public policy.

The Program supports or conducts a number of activities, including studies, monographs, special reports, and professional seminars with government, industry, policy research, and university representatives. An Annual Report of current activities is published in the Fall.

Funding sources for the Program of Policy Studies in Science and Technology include the University; a basic institutional grant from NASA; and grants and contracts from other agencies such as the National Science Foundation, the National Endowment for the Humanities, the National Bureau of Standards, and the Office of Education, Department of Health, Education, and Welfare.

STAFF*

- Director of the Program: Louis H. Mayo, *Professor of Law; Vice President for Advanced Policy Studies*
 Guy Black, *Associate Professor of Business Economics*
 David S. Brown, *Professor of Management*
 James M. Brown, *Professor of Law*
 Clarence H. Danhof, *Senior Staff Scientist*
 Richard F. Ericson, *Professor of Management; Director, Systems and Cybernetics Project*
 Gilbert J. Ginsburg, *Associate Professor of Law; Assistant Director, Government Contracts Program*
 Harold P. Green, *Professor of Law; Director, Law, Science, and Technology Program*
 John Hanessian, Jr., *Associate Professorial Lecturer in Political Science*
 Mary A. Holman, *Associate Professor of Economics*
 C. Terrence Ireland, *Associate Professor of Statistics*
 Norman Kaplan, *Professor of Sociology*
 Raphael Kasper, *Research Scientist*
 John Logsdon, *Research Scientist; Assistant Professor of Political Science, Catholic University of America*
 James E. Mahoney, *Senior Staff Scientist*
 Joseph B. Margolin, *Associate Professorial Lecturer in Psychology; Director, Educational Policy Group*
 Paul J. Mika, *Associate Professor of Geography*
 Clarence C. Mondale, *Associate Professor of American Civilization*
 Ellis R. Mottur, *Senior Staff Scientist*
 Bernard A. Schriever, General, USAF (Ret.), *Senior Staff Scientist; Chairman of the Board, Schriever & McKee Associates, Inc., Arlington, Va.*
 Richard W. Stephens, *Professor of Sociology*
 Charles T. Stewart, Jr., *Professor of Economics*
 Joseph L. Tropea, *Assistant Professor of Sociology*

ADVISORY COMMITTEE

- Chairman: Lloyd H. Elliott, *President, George Washington University*
 Vice Chairman: Bernard A. Schriever, General, USAF (Ret.), *Chairman of the Board, Schriever & McKee Associates, Inc., Arlington, Va.*
 Raymond L. Bisplinghoff, *Head, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology*
 Harold F. Bright, *Vice President for Academic Affairs, George Washington University*
 Arthur E. Burns, *Dean, Graduate School of Arts and Sciences, George Washington University*
 Joseph L. Fisher, *President, Resources for the Future, Inc., Washington, D.C.*
 Lawrence Levy, *President, Allied Research Associates, Concord, Mass.*
 Dwight Waldo, *Albert Schweitzer Professor in the Humanities, Syracuse University*
 Reuben E. Wood, *Professor of Chemistry, George Washington University*

* Staff listing consists of members who allocate all or a substantial portion of their effort to Program activities. Directors and members of the staffs of other policy study groups in the University also participate in the various seminar series, conferences, and other activities of the Program.

SPONSORED RESEARCH

Assistant Vice President for Research C.J. Lange

THE RESEARCH PROGRAMS listed in this section are special programs which are established for the specific purpose of attacking in an academic atmosphere problems proposed by the individual projects or submitted by the sponsoring agency. Cooperation between these programs and the various departments of instruction is as close as the nature and needs of the programs and departments will permit.

BIOMETRIC LABORATORY

The Biometric Laboratory applies statistical techniques to pharmacological problems related to mental health. It was established under a contract with the National Institutes of Health. The laboratory assists investigators throughout the United States in planning research and in analyzing data. The majority of these research projects concern the effects of drugs on behavior.

Roland R. Bonato, Ph.D., *Director; Associate Research Professor of Psychology*
Kenneth Chi-Kun Yang, B.A., *Assistant Director*
Leonard R. Derogatis, Ph.D., *Senior Staff Scientist*
William Guy, Ph.D., *Senior Staff Scientist*
James J. McKeon, Ph.D., *Senior Staff Scientist*
Oldrich Vinar, C.Sc., M.D., *Senior Staff Scientist*
Richard W. Switalski, M.S., *Senior Scientist*
David Davis, B.S., *Research Scientist*
Robert Lazar, B.A., *Research Scientist*
Anne K. Parkin, *Research Scientist*
Arden Smith, B.S., *Research Scientist*

CENTER FOR MANPOWER POLICY STUDIES

The Center for Manpower Policy Studies is devoted to the evaluation of federally-supported manpower, antipoverty, and related programs. The Center is financed by a grant from the Ford Foundation and offers in conjunction with the Department of Economics graduate courses in labor economics and manpower policy.

Sar A. Levitan, Ph.D., *Co-director; Research Professor of Economics*
Garth L. Mangum, Ph.D., *Co-director; Research Professor of Economics*
Lowell Glenn, M.B.A., *Research Scientist*
Judith W. LaVor, B.A., *Research Associate*
Robert Taggart III, B.A., *Research Associate*

COMPUTER PROGRAMS RESEARCH PROJECT

The purpose of the Computer Programs Research Project is to develop general purpose computer programs for the Division of Research Grants of the National Institutes of Health. The current activities of the project include analysis of data gathering and data processing activities, examination of numerous specific problems for common elements that can be resolved by a single generalized computer program, and developing and testing these programs on the IBM 360 system. Research efforts are directed toward producing limited information retrieval systems.

Richard S. Enburg, Ph.D., *Director*
William C. Ferguson, Jr., *Assistant Director*

**EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
CLEARINGHOUSE ON HIGHER EDUCATION**

The Educational Resources Information Center (ERIC) Clearinghouse on Higher Education was established in the Fall of 1968 with the support of the U.S. Office of Education; it is the nineteenth in a national network of education information centers. The Clearinghouse is responsible for the acquisition, evaluation, abstracting, indexing, and dissemination of research reports and other documents dealing with problems and issues in the field of higher education.

Carl James Lange, Ph.D., *Director; Adjunct Associate Professor of Psychology*

HUMAN RESOURCES RESEARCH OFFICE

The Human Resources Research Office (HumRRO) was originally established in 1951 to carry out an integrated program of human resources research for the Department of the Army. HumRRO research may now be performed for other departments of the Federal Government, as well as with state and local governments and with organizations which support training and educational research. HumRRO's mission involves development of the technology of training and education, research and development on specific problems in training and education, research on leadership and management and training for these, studies of techniques for motivating training and performance, studies of human performance in military and educational systems, and the teaching of the technology of training and education.

OFFICE OF THE DIRECTOR

Meredith P. Crawford, Ph.D., *Director*
William A. McClelland, Ph.D., *Associate Director; Professorial Lecturer in Psychology*
Eugene A. Cogan, Ph.D., *Assistant Director for Reporting*
Charles W. Smith, J.D., *Business Administrator*
Robert G. Smith, Jr., Ph.D., *Assistant Director for Operations*
Saul Lavisky, M.A., *Research Information Coordinator*
Lola M. Zook, B.A., *Editorial Adviser and Publications Manager*
Albert I. Shepherd, Ed.M., *HumRRO Representative at Headquarters*
USCONARC

COMPUTER CENTER

David S. Hoffman, M.S., *Senior Staff Scientist*
Edgar M. Haverland, Ph.D., *Senior Scientist*

DIVISION NO. 1 (SYSTEM OPERATIONS), ALEXANDRIA, VIRGINIA

J. Daniel Lyons, Ph.D., *Director of Research*
C. Dennis Fink, Ph.D., *Senior Staff Scientist*
Edward H. Kingsley, M.A., *Senior Staff Scientist*
A. James McKnight, Ph.D., *Senior Staff Scientist*
Robert J. Seidel, Ph.D., *Senior Staff Scientist*
Felix F. Kopstein, Ph.D., *Senior Scientist*
Robert C. Trexler, B.S., *Senior Scientist*
Richard D. Behringer, Ph.D., *Research Scientist*
Patrick J. Butler, M.A., *Research Scientist*
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Marcia K. Harrington, M.A., *Research Scientist*
Herbert B. Leedy, Ph.D., *Research Scientist*
Richard D. Rosenblatt, B.S., *Research Scientist*
Miriam A. Safren, Ph.D., *Research Scientist*
Sarah G. See, Ed.M., *Research Scientist*
Harold Wagner, Ph.D., *Research Scientist*

DIVISION NO. 2 (ARMOR), FORT KNOX, KENTUCKY

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Laban L. Ainsworth, Ph.D., *Senior Scientist*
Elmo E. Miller, Ph.D., *Senior Scientist*
Shepherd Schwartz, B.A., *Senior Scientist*
Eugene H. Drucker, M.A., *Research Scientist*
Walter J. Gunn, M.A., *Research Scientist*
Joan C. Lee, Ph.D., *Research Scientist*
William C. Osborn, M.S., *Research Scientist*
Richard W. Sheldon, Ph.D., *Research Scientist*

DIVISION NO. 3 (RECRUIT TRAINING), PRESIDIO OF MONTEREY, CALIFORNIA

Howard H. McFann, Ph.D., *Director of Research*
Hilton M. Bialek, Ph.D., *Senior Staff Scientist*
Herbert G. Gerjuoy, Ph.D., *Senior Staff Scientist*
John E. Taylor, Ph.D., *Senior Staff Scientist*
Robert Vineberg, Ph.D., *Senior Staff Scientist*
Joseph S. Ward, Ph.D., *Senior Staff Scientist*
John S. Caylor, Ph.D., *Senior Scientist*
Richard P. Kern, Ph.D., *Senior Scientist*
Ernest K. Montague, Ph.D., *Senior Scientist*
Morris Showel, Ph.D., *Senior Scientist*
Thomas G. Sticht, Ph.D., *Senior Scientist*
Elaine N. Taylor, Ph.D., *Senior Scientist*

Wayne L. Fox, Ph.D., *Research Scientist*
Richard E. McCrady, Ph.D., *Research Scientist*
Kenneth J. Weingarten, B.S., *Research Scientist*

DIVISION NO. 4 (INFANTRY), FORT BENNING, GEORGIA

T.O. Jacobs, Ph.D., *Director of Research*
Joseph A. Olmstead, Jr., Ph.D., *Senior Staff Scientist*
James A. Caviness, Ph.D., *Senior Scientist*
James W. Dees, Ph.D., *Senior Scientist*
Douglas S. Holmes, Ph.D., *Senior Scientist*
Theodore R. Powers, M.A., *Senior Scientist*
Arthur J. DeLuca, M.A., *Research Scientist*

DIVISION NO. 5 (AIR DEFENSE), FORT BLISS, TEXAS

Robert D. Baldwin, Ph.D., *Director of Research*
Harry L. Ammerman, Ph.D., *Senior Scientist*
Albert L. Kubala, Ph.D., *Senior Scientist*
William H. Melching, Ph.D., *Senior Scientist*
Paul G. Whitmore, Ph.D., *Senior Scientist*
A. Dean Wright, M.S., *Senior Scientist*
Harold E. Christensen, M.S., *Research Scientist*
E. Wayne Frederickson, M.A., *Research Scientist*
John N. Park, Ph.D., *Research Scientist*

DIVISION NO. 6 (AVIATION), FORT RUCKER, ALABAMA

Wallace W. Prophet, Ph.D., *Director of Research*
Francis H. Thomas, Ph.D., *Senior Staff Scientist*
Paul W. Caro, Jr., Ph.D., *Senior Scientist*
Wiley R. Boyles, Ph.D., *Senior Scientist*
Eugene R. Hall, M.A., *Senior Scientist*
Robert H. Wright, Ph.D., *Senior Scientist*
H. Alton Boyd, M.S., *Research Scientist*
Russel E. Schulz, M.A., *Research Scientist*

DIVISION NO. 7 (LANGUAGE AND AREA TRAINING), ALEXANDRIA, VIRGINIA

Arthur J. Hoehn, Ph.D., *Director of Research*
George H. Brown, Ph.D., *Senior Staff Scientist*
Alfred J. Kraemer, Ph.D., *Senior Staff Scientist*
Jose Armilla, Ph.D., *Senior Scientist*
Dean K. Froehlich, Ph.D., *Senior Scientist*
John W. McCrary, Jr., Ph.D., *Senior Scientist*
Samuel G. Taxis, M.A., *Senior Scientist*
Harley M. Upchurch, Ph.D., *Senior Scientist*
Angelo A. Cozzetto, M.A., *Research Scientist*
Dharam P. Yadav, Ph.D., *Research Scientist*

LOGISTICS RESEARCH PROJECT

The purpose of the Logistics Research Project is to study problems of logistics planning and control in order to develop methodology permitting effective solutions. Current areas of research are inventory; information systems; transportation; readiness; maintenance; and supporting research in mathematics, computer sciences, economics, statistics, and operations research. This project is operated under a contract with the Department of the Navy.

William H. Marlow, Ph.D., *Principal Investigator; Professorial Lecturer in Mathematics*

Joseph P. Fennell, M.A., *Deputy Principal Investigator*

Sheldon E. Haber, Ph.D., *Deputy Principal Investigator; Associate Professorial Lecturer in Economics*

Henry Solomon, Ph.D., *Deputy Principal Investigator; Professor of Economics*

William E. Caves, *Senior Staff Scientist*

Erling F. Rosholdt, M.E.A., *Senior Staff Scientist*

Lawrence E. Schwartz, Ph.D., *Senior Staff Scientist*

Frank W. Segel, M.B.A., *Senior Staff Scientist*

Ross E. Tomlinson, M.A., *Senior Staff Scientist*

William L. Wilkinson, M.S., *Senior Staff Scientist*

William B. Gruttke, Ph.D., *Senior Scientist*

James E. Hamilton, M.S., *Senior Scientist*

Raymond W. Lewis, B.A., *Senior Scientist*

Arthur J. Nevins, Ph.D., *Senior Scientist*

Steven A. Frank, M.B.A., *Research Scientist*

OPERATIONAL AND DEMOGRAPHIC ANALYSIS FOR MATERNAL AND CHILD HEALTH CARE PROJECT

This project is concerned with computer-supported research into the maternal and child mortality levels of the United States and the socioeconomic and health facilities factors which affect those levels. In addition to this research, the project designs and implements informational and evaluative studies of interest to the sponsoring agency. A major activity has been the development and field testing of the Government's Provisional Reporting System on Family Planning Services. This project is operated under a grant from the Children's Bureau, Department of Health, Education, and Welfare.

Roland R. Bonato, Ph.D., *Director; Associate Research Professor of Psychology*

Margaret Pratt, B.A., *Assistant Director*

Gerald L. Giesecke, B.S., *Senior Scientist*

SOCIAL RESEARCH GROUP

The Social Research Group conducts surveys and experiments with concentration on basic research underlying an approach to the solution of social problems.

Ira H. Cisin, Ph.D., *Director; Professor of Sociology*

Hugh J. Parry, Ph.D., *Associate Director; Research Professor of Sociology*

Don Cahalan, Ph.D., *Senior Staff Scientist*

Ben L. Owens, *Senior Staff Scientist*

Regis H. Walther, Ph.D., *Senior Staff Scientist*

Elaine F. Hayden, Ph.D., *Senior Scientist*

Carol H. Newcomb, M.A., *Senior Scientist*

COURSES OF INSTRUCTION

ON THE FOLLOWING PAGES OF THIS CATALOGUE, under the alphabetically arranged names of the departments of instruction and special interdepartmental programs, are listed the courses of instruction offered by the University in the summer of 1969 and in the academic year 1969-70. The courses as here listed are subject to change. The University reserves the right to withdraw any course announced.

HOURS OF INSTRUCTION

Classes are scheduled in the morning, afternoon, and evening. Evening and daytime sections of the same course are identical, are taught by the same staff of instructors, and carry the same amount of credit. By taking the evening and summer classes and extending the time of study beyond the usual four years, a part-time student may complete the requirements and obtain a degree.

EXPLANATION OF COURSE NUMBERS

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the Dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be taken for graduate credit.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be taken for graduate credit only upon the approval of the dean and the instructor at the time of registration. Such approval is granted only with the provision that students must complete additional work in order to receive graduate credit.

Third-group courses.—Courses numbered from 201 to 300 (in the Graduate School of Arts and Sciences, the School of Government and Business Administration, and the School of Public and International Affairs); courses numbered 201 to 400 (in the School of Education) are planned primarily for graduate students. They are open, with the approval of the instructor, to qualified seniors; they are not open to other undergraduates.

Fourth-group courses.—Courses numbered 301 to 400 in the Graduate School of Arts and Sciences are limited to graduate students; but they are primarily for doctoral candidates. In the School of Education fourth-group courses, numbered 401 to 500, are limited to graduate students with Master's degrees from accredited institutions.

SEMESTER HOURS OF CREDIT

The number of semester hours of credit given for the satisfactory completion of a course is, in most cases, indicated in parentheses after the name of the course. Thus, a year course giving 3 hours of credit each semester is marked (3-3), and a semester course giving 3 hours of credit is marked (3). A semester hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

Accounting

Professor E.J.B. Lewis (Chairman)

Professorial Lecturers J.L. Buckler, M.P. Pujol, A.L. Litke, Daniel Borth

Associate Professors F.C. Kurtz, Chei-Min Paik, A.J. Mastro, C.D. Hughes

Associate Professorial Lecturers R.B. Brown, Raymond Einhorn, H.V. Ladley

Assistant Professors M.G. Gallagher, J.L. Thompson, Jr.

Assistant Professorial Lecturers R.W. Perkins, E.M. Wysong, Jr., S.F. Platt.

David Neuman

Lecturers T.E. Richards, R.H. Cowan, Jr.

Associate in Arts (terminal curriculum in Accounting).—See page 81.

Bachelor of Business Administration with a major in Accounting.—See pages 128-31.

Master of Business Administration in the field of Accounting.—See pages 136-40.

FIRST GROUP

1-2 Introductory Accounting (3-3)

Staff

Preparation, uses, and limitations of financial reports. *First half:* basic financial reporting concepts and data accumulation and processing. *Second half:* introduction to managerial accounting—financial programming, cost determination, and analysis of financial statements. Accounting 1 is prerequisite to Accounting 2. (*First half and second half:* fall and spring—day and evening; summer 1969)

SECOND GROUP

101 Cost Accounting (3)

Mastro, Paik

Theory and purposes of industrial cost accounting, systems of cost control and determination, analysis and interpretation of cost data. Prerequisite: Accounting 1-2. (Fall—day; spring—evening)

111 Financial Statement Analysis (3)

Litke

Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors. Prerequisite: 6 semester hours of accounting or permission of instructor. (Spring—evening)

115 Survey of Accounting (3)

Gallagher, Thompson

Preparation, uses, and limitations of financial information in the management process. Not open for credit to accounting majors. (Fall and spring—evening; summer 1969)

121-22 Intermediate Accounting (3-3)

Kurtz, Lewis

First half: accounting for assets and liabilities. Prerequisite: Accounting 1-2 or permission of instructor. *Second half:* partnership, corporation, consignment, and installment-sales accounting. Prerequisite: Accounting 121 or permission of instructor. (*First half:* fall—day; spring—evening; summer 1969. *Second half:* fall—evening; spring—day; summer 1969.)

132 Accounting Theory (3)

Mastro

Development of basic accounting principles and concepts, review of current thought as reflected in the pronouncements of leading professional and accounting research associations, major contributions to accounting literature. Prerequisite: 6 semester hours of accounting. (Spring—evening)

141 Governmental Accounting (3)

Lewis, Pujol

Appropriation, encumbrance, and fund accounting for governmental and institutional entities. Prerequisite: Accounting 1-2 or permission of instructor. (Fall—evening)

144 Federal Accounting (3)

Lewis, Pujol

Accounting procedures in the Federal Government, with emphasis on agency-level accounts and accounting support for cost-based budgets. Prerequisite: Accounting 141 or permission of instructor. (Not offered 1969-70)

161 Federal Income Taxation (3)

Gallagher

Federal income tax concepts applicable to individuals and corporations, differences between tax accounting and financial accounting. Prerequisite: Accounting 1-2 or permission of instructor (Fall—day; spring—evening)

162 Tax Research and Planning (3)

Gallagher

Survey of substantive federal tax provisions relating to corporations, partnerships, security transactions, estates, gifts, and pension and profit-sharing plans; emphasis on tax research and tax-planning objectives. (Spring—evening)

171 Auditing (3)

Kurtz, Wysong

Duties and responsibilities of auditors: principles and procedures of making audits, techniques of verifying financial-statement items, preparation of audit working papers and reports. Prerequisite: Accounting 121-22. (Fall—evening)

172 Audit Planning and Control (3)

Kurtz

Standards of audit reporting and other current auditing topics, including application of statistical sampling techniques to auditing, auditing electronic systems, and management advisory services. Prerequisite: Accounting 171 or permission of instructor. (Spring—evening)

181 Accounting Systems (3)

Lewis, Mastro

Theory and procedure of designing and installing systems for collecting, recording, analyzing, and presenting accounting and other business data. Prerequisite: Accounting 101, 121-22, and 171, or permission of instructor. (Spring—evening)

- 191 **Advanced Accounting (3)** Thompson
Consolidated statements, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Accounting 121-22. (Fall—evening)
- 193 **Business Budgeting (3)** Lewis, Perkins
Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in management of commercial and industrial organizations. Prerequisite: Accounting 1-2. (Fall—day; spring—evening; summer 1969)
- 196 **Management Decisions and Accounting (3)** Mastro
Analysis of information required in capital budgeting, inventory management, and other decisions; cash-flow and probability data; advanced cost accounting systems. Prerequisite: Accounting 101. (Spring—evening)

THIRD GROUP

- 215 **Survey of Managerial Accounting (3)** Gallagher, Thompson
Nature, preparation, analysis, and interpretation of accounting reports; cost accounting, business budgeting, and internal accounting controls and their use in the management process. Prerequisite: Accounting 1-2 or 115 or permission of instructor. (Fall and spring—evening; summer 1969)
- 231 **Contemporary Accounting Theory (3)** Mastro
Advanced accounting principles and concepts and recent theories concerned with the valuation and amortization of assets and determination of income. Prerequisite: 6 semester hours of accounting and permission of instructor. (Fall—evening)
- 241 **Accounting and Related Disciplines (3)** Paik
Relationship between accounting and such related disciplines as economics, statistical theory, and operations research; emphasis on what the accountant has to offer to these allied fields and on new ideas and requirements these fields may offer or impose upon accounting. Prerequisite: 6 semester hours of accounting. (Not offered 1969-70)
- 245 **Decision Systems and Accounting (3)** Paik
Limited to students in the Navy Graduate Financial Management Program. Problems encountered in managing financial and related information systems in complex organizations; the relationships between accounting in its broadest sense and management control and decision systems. (Fall—as arranged)
- 246 **Governmental Accounting and Budgeting Problems (3)** Lewis, Borth
Current problems in federal financial planning, programming, budgeting, accounting, and auditing. Prerequisite: Accounting 144 or permission of instructor. (Spring—evening)
- 275 **Internal Control and Auditing (3)** Mastro, Wyson
Internal accounting controls and review and appraisal of accounting systems, procedures, and managerial policies with respect to their effectiveness and profitability. Prerequisite: Accounting 171 or permission of instructor. (Fall—evening; summer 1969)

- 276 Management Planning and Control (3)** Paik
Theories and techniques of cost accounting and budgetary planning and control, with emphasis on: the relation of planning and control systems to corporate and departmental objectives; control of decentralized operations and discretionary costs; long-range planning and control. Prerequisite: Accounting 101 and Business Administration 102 or Business and Public Administration 201, or permission of instructor. (Spring—evening)
- 292 Professional Accounting Review (3)** Lewis
Review and coordination of principles and techniques developed in the accounting curriculum, in preparation for general practice in the field of accountancy and for professional accounting examinations. Prerequisite: Accounting 101, 141, 161, 171, and 191; or permission of instructor. (Spring—evening)
- 295 Seminar in Accounting (3)** Borth
Selected accounting research topics and problems; individual oral and written reports. Admission by permission of instructor; may be repeated once for credit. (Fall—evening)
- 297 Accounting Reading and Research (3)** Staff
May be repeated once for credit. (Fall and spring—as arranged; summer 1969)
- 299 Thesis Seminar (3)** Staff
(Fall and spring—as arranged; summer 1969)
- 300 Thesis Research (3)** Staff
(Fall and spring—as arranged; summer 1969)

American Studies Program

Professors R.H. Walker, Jr. (*Director*), J.S. Redding
Associate Professors G.E. McCandlish, C.C. Mondale
Instructor Melvyn Hammarberg

Bachelor of Arts with a major in American Civilization (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 76. American Civilization 71-72 Introduction to American Civilization is recommended.

Required: the general requirements, pages 81-85, and the passing of the American Civilization Major Examination at the end of the senior year. The program is based on the development of a coordinated understanding of American civilization, past and present, acquired through the offerings of traditional departments and special courses developed within the program. Majors will be expected to develop a concentration of approximately eighteen semester hours in one of the humanistic subjects, focusing on the United States but including relevant foreign background. A secondary emphasis of approximately twelve semester hours will be expected in one of the social sciences. Art, literature, philosophy, or religion may be chosen as a humanistic concentration; anthropology, economics, geography, political science, or sociology may be chosen as a social science; history may be chosen as either the humanistic concentration or the social science emphasis. As juniors, in American Civilization 171-72, and as seniors, in American Civilization 179-80, majors will be offered courses designed to coordinate and unify their varied curricular experiences.

Master of Arts in the field of American Civilization.—Prerequisite: the degree of Bachelor of Arts with an undergraduate major in American Civilization or in the subject in which concentration is contemplated.

Required: the general requirements, pages 89–95, including (1) American Civilization 271–72 (six semester hours), a seminar in the methods and materials for teaching and research in American Civilization; (2) eighteen additional semester hours in a carefully related pattern, focusing on a concentrated approach to the study of American Civilization; (3) a Master's thesis (six semester hours) written on an approved topic under the direction of the instructor in whose field the major emphasis falls; (4) a Master's Comprehensive Examination reflecting the candidate's area of concentration.

Doctor of Philosophy in the field of American Civilization.—This program combines work in the humanities and social sciences, with the option of stressing preparation for museum and library careers. Applicants are required to have an adequate background in the humanities and/or social sciences as they apply to the understanding of American civilization. See pages 89–93, 95–97, for requirements for the degree.

Fields of study for the doctorate: (1) *American History (Cultural, Economic, Political, Social), American Literature, History of Fine Arts and Folk Arts, The Negro in American Civilization, Philosophy in America*, related fields such as *English Literature and European History*; (2) in affiliation with the Library of Congress—supervised historical study in bibliographic resources including *American History and Politics, Cartography, Cross-cultural Studies, Government Documents, Graphic Arts and Music, Motion Pictures and Recorded Sound, Printing and Book-making*; (3) in affiliation with the Smithsonian Institution—supervised studies including *Aspects of Cultural and Political History, Fine Arts and Folk Arts, History of American Arts and Manufacturers, History of Exploration, History of Science and Technology, Maritime History, Military History, Naval History*. Additional fields of study may be arranged in both the Library of Congress and Smithsonian cooperative programs. Special announcements concerning these programs are issued periodically and are available in the Office of the Director of the American Studies Program.

AMERICAN CIVILIZATION

FIRST GROUP

71-72 Introduction to American Civilization (3-3)

Mondale, Redding

Themes and issues of American civilization since Colonial times, with emphasis on the modern setting. Recommended for sophomores who plan to major in American Civilization. (Academic year—day and evening)

SECOND GROUP

101 American Civilization (3)

(Not offered 1969-70)

Walker and Staff

171-72 Studies in American Literature (3-3)

McCandlish

Same as English 171-72. Major factors in the national cultural tradition as shown by outstanding writers. Recommended for juniors who are majoring in American Civilization. Prerequisite: English 51-52 or 71-72. (Academic year—day and evening)

175 The Mind of the Negro (3)

Redding

An examination of Afro-American thought and the individuals, movements, and organizations through which that thought found expression. (Summer 1969)

176 Negro Life in American Cities since 1860 (3)

An examination of the main features of the Negro community that developed within American cities before the emergence of the ghetto, and of the changes the ghetto later imposed. An examination of the social structures of these cities within cities, their culture, their economic bases, their political organization, and the effects of the black rebellion of the 1960's. (Summer 1969)

179-80 Proseminar in American Civilization (3-3)

Mondale, Walker

Coordinating course for seniors majoring in American Civilization. (Academic year—day)

THIRD GROUP**271-72 Seminar: Research and Teaching in American Civilization (3-3)**

Mondale, Walker

Consideration of American studies as an area for study and teaching; introduction to research and bibliography. Required of candidates for the degree of Master of Arts in the field of American Civilization. (Academic year—day)

***273-74 Seminar: Materials in American Negro Culture (3-3)**

Redding

Prerequisite: History 173-74 or equivalent. (Academic year—day)

285-86 Seminar: American Colonial Literature (3-3)

McCandlish

Same as English 285-86. (Not offered 1969-70)

295 Independent Studies (arr.)

Staff

Limited to Master's candidates. Permission of instructor, in writing, required. (Fall and spring—as arranged; summer 1969)

299-300 Thesis Research (3-3)

Staff

FOURTH GROUP**373-74 Readings on the Negro in American Culture (3-3)**

Redding

For students preparing for the Doctor of Philosophy general examination in the field of American Civilization. (Not offered 1969-70)

381-82 Readings in American Cultural History (3-3)

Mondale, Walker

For students preparing for the Doctor of Philosophy general examination in the field of American Civilization. (Academic year—day)

385-86 Readings in American Colonial Literature (3-3)

McCandlish

Same as English 385-86. (Not offered 1969-70)

398 Advanced Reading and Research (arr.)

Staff

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged)

* Joint offering of the Department of History and the American Studies program. Students may register under either designation.

399 Dissertation Research (arr.)

Staff

Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged)

COURSES OFFERED IN AFFILIATION WITH THE LIBRARY OF CONGRESS

The following courses are offered at the Library of Congress by members of its staff:

THIRD GROUP

255 Research Orientation Seminar: Americana in the Library of Congress (6)

Introduction to research opportunities and fields of study which contribute to the profession of librarianship. Development, bibliographic control, and research use of the Library of Congress' special collections; brief comparisons with major collections elsewhere. (Fall—day)

FOURTH GROUP

355-56 Seminar: Advanced Library Research (3-3)

Introduction to practical problems of research in librarianship and control of collections. Supervised study in selected subject fields; emphasis on collections in the Library of Congress and concentrated work in a special collection. Prerequisite: American Civilization 255. (Academic year—as arranged)

389 Advanced Reading and Research (arr.)

Limited to students preparing for the Doctor of Philosophy general examination in fields offered in affiliation with the Library of Congress. May be repeated for credit. (Fall and spring—as arranged)

390 Dissertation Research (arr.)

For Doctor of Philosophy candidates preparing dissertations based upon or significantly related to collections of the Library of Congress. Supervised by specialists at the Library. Prerequisite: American Civilization 355-56. (Fall and spring—as arranged)

COURSES OFFERED IN AFFILIATION WITH THE SMITHSONIAN INSTITUTION

The Graduate School of Arts and Sciences is affiliated with the Smithsonian Institution's Program for Graduate Students in the History of American Civilization. The following courses are offered at the Museum of History and Technology, by members of its staff:

THIRD GROUP

250 Orientation Course: Material Aspects of American Civilization (3)

Familiarization with the historical collections of the Smithsonian Institution and introduction to opportunities for research and publication based

on historical objects. Required of all students in the doctoral program affiliated with the Smithsonian Institution. (Fall—day)

FOURTH GROUP

351-52 Research in Selected Aspects of American Civilization (3-3)

Supervised study and/or field work in selected subject areas related to the activities of the Smithsonian Institution. Prerequisite: American Civilization 250. (Academic year—day)

394 Advanced Reading and Research (arr.)

Limited to students preparing for the Doctor of Philosophy general examination in fields offered in affiliation with the Smithsonian Institution. May be repeated for credit. (Fall and spring—as arranged)

395 Dissertation Research (arr.)

For Doctor of Philosophy candidates preparing dissertations significantly related to the material aspects of American civilization. Students work under curatorial supervision at the Smithsonian Institution. Prerequisite: American Civilization 351-52. May be repeated for credit. (Fall and spring—as arranged)

Anatomy

Professors I. R. Telford (*Chairman*), Paul Calabrisi, C.M. Goss (*Visiting—Medical History*), F.D. Allan, T.N. Johnson
 Professorial Lecturer J.L. Angel
 Associate Professor J.B. Christensen
 Associate Professorial Lecturers J.A. DiPaolo, L.E. Church
 Assistant Professor E.N. Albert
 Assistant Clinical Professor R.N. Brown
 Assistant Professorial Lecturers R.G. Clark, Joan Blanchette

Master of Science in the field of Anatomy.—Prerequisite: a Bachelor's degree from this University, or equivalent, with a major in a biological science or Chemistry. The undergraduate program must include the following courses, or equivalent: Biological Sciences 11-12; Chemistry 11-12, 51-52, 53-54; Physics 1, 2. Biochemistry 221-22 is recommended as an elective.

Required: the general requirements, pages 89-95, including Anatomy 202, 203, 204, 205, 221-22, 295, 299-300, and graduate courses in biochemistry, physiology, or related fields selected with the approval of the Department. It is not always possible to arrange courses and research so that the student can be assured of completing all the required work in one academic year.

Doctor of Philosophy fields of study in Anatomy: Electron Microscopy, Embryology, Gross Anatomy, Histology, Human Genetics, Neuroanatomy, and Physical Anthropology.—See pages 89-93, 95-97, for requirements for the degree.

202 Gross Anatomy (6)

Calabrisi and Staff

Regional dissections of adult cadaver supplemented with lectures and X-rays. Laboratory fee, \$30. (Fall—day)

- 203 Human Embryology (1)** Allan
Origin and development of human body; emphasis on value of embryology in interpreting anatomical anomalies. (Fall—day)
- 204 Neuroanatomy (2)** Johnson and Staff
Gross and microscopic anatomy of central nervous system and special senses. Laboratory fee, \$13. (Fall—day)
- 205 Microscopic Anatomy (3)** Telford and Staff
Microscopic structure of cells, tissues, and organs of the human body. Laboratory fee, \$13. (Fall—day)
- 221-22 Seminar (1-1)** Johnson and Staff
Research reports and discussions of special topics by staff and graduate students. (Academic year—day)
- 249 Introduction to Anatomical Research (1)** Telford and Staff
Major research techniques as applied to biological materials in the various anatomical disciplines. (Fall—day)
- 252 Physical Anthropology (1)** Angel
Variations in man and factors affecting him, human evolution and racial differences, anatomy and culture of ancient man. (Spring—day)
- 254 Fetal Anatomy (2)** Allan
Dissection of early and late human fetus. Comparison of fetal and adult structures. 20 students. Laboratory fee, \$10. (Spring—day)
- 255 Basic Genetics (1)** Di Paolo
Introductory. Basic concepts in genetics. Mendelian inheritance, linkage, gene interaction, chromosome mapping, mutation, dominant and recessive genes. (Spring—day)
- 256 Human Genetics (1)**
General principles of genetics, new cytogenetics techniques, aneuploidy in man and its significance, biochemical aspects of heredity, genetic counseling. (Spring—day)
- 260 Electron Microscopy in Cellular Biology—Lecture (1)** Blanchette
Anatomy 260 may be taken without 261. (Spring—day)
- 261 Electron Microscopy in Cellular Biology—Laboratory (2)** Blanchette
Prerequisite or concurrent registration: Anatomy 260. 12 students. Laboratory fee, \$15. (Spring—as arranged)
- 262 Gross Anatomy of Upper and Lower Extremities (2)** Calabresi
Detailed dissection, supplemented by X-ray anatomy; discussions, assigned reading. 24 students. Laboratory fee, \$10. (Spring—day)
- 264 Gross Anatomy of Head and Neck (2)** Christensen
Detailed dissection, supplemented by X-ray anatomy; discussions, assigned reading. 24 students. Laboratory fee, \$10. (Spring—day)
- 266 Gross Anatomy of Thorax and Abdomen (2)** Christensen
Detailed dissection, supplemented by X-ray anatomy; discussions, assigned reading. 24 students. Laboratory fee, \$10. (Spring—day)

- 268 Gross Anatomy of Pelvis, Perineum, and Lower Extremity (2)** Calabrisi
Detailed dissection, supplemented by X-ray anatomy; discussions, assigned reading. 24 students. Laboratory fee, \$10. (Spring—day)
- 270 Dissection of the Human Brain (1)** Johnson
Dissection of major pathways and nuclei of the brain with consideration of ventricular system; conferences and assigned reading. 20 students. Laboratory fee, \$10. (Spring—day)
- 272 Autonomic Nervous System (1)** Allan
Development, microscopic and gross anatomy, function of central and peripheral components of autonomic nervous system. (Spring—day)
- 274 Tissues of the Body (1)** Telford
Basic concepts in anatomy, with emphasis on primary tissues of the body—their histogenesis, growth, functions, regenerative capacities, aging, death. (Spring—day)
- 278 History of Anatomy and Surgery (1)** Goss
Lectures and discussions related particularly to the lives and times of outstanding contributors to the advancement of the science of anatomy and surgery. (Spring—day)
- 295 Research (arr.)** Staff
Content differs each time course is offered; may be repeated once for credit. Fee to be arranged. (Fall and spring—as arranged)
- 299–300 Thesis Research (3–3)** Staff
(Academic year—as arranged)
- 398 Advanced Reading and Research (arr.)** Staff
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)
- 399 Dissertation Research (arr.)** Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Anthropology

Adjunct Professors W.H. Crocker, Elliott Liebow, S.H. Riesenberg
Professorial Lecturer J.L. Angel
Associate Professors R.K. Lewis (Chairman), Ruth McKay
Assistant Professors Ruth Krulfeld, R.L. Humphrey, Jr., V.K. Golla, Suzanne Reynolds

Bachelor of Arts with a major in Anthropology (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, including Anthropology 1–2.
Required: in addition to the general requirements stated on pages 81–85, twenty-four semester hours in Anthropology, which must include 192 and second-group

Anthropology courses in each of the following categories: Aspects of Culture (courses numbered in the 150's), Linguistics (courses numbered in the 160's), Ethnology (courses numbered in the 170's), and Physical Anthropology and Archeology (courses numbered in the 180's). Students in the senior year are encouraged to elect courses from the following: Biological Sciences 108; English 125; Geology 154; Mathematics 101; Philosophy 192; Psychology 115, 121; and Statistics 104. Students are normally provided the opportunity to participate in field research conducted each summer by anthropological field schools in states of the American West. Opportunities for such research participation in South America are also periodically provided for exceptionally able students selected by the staff member conducting the field research.

Master of Arts in the field of Anthropology.—Prerequisite: the degree of Bachelor of Arts with a major in Anthropology from this University, or equivalent.

Required: the general requirements, pages 89-95. All courses must be approved in advance by the adviser. The Master's Comprehensive Examination must be taken before registration for the second half of the thesis work.

Bachelor of Arts with a major in Latin American Studies with optional emphasis in Anthropology (Interdepartmental).—See page 301.

Master of Arts in the field of Latin American Studies with optional emphasis in Anthropology (Interdepartmental).—See pages 301-2.

Master of Arts in the field of Linguistics.—See pages 303-5.

Departmental prerequisite: Anthropology 1-2 is prerequisite to all second-group courses in Anthropology.

FIRST GROUP

1-2 Introductory Anthropology (3-3)

Staff

First half: survey of man's origin, physical evolution, and culture history. *Second half:* survey of the world's cultures, illustrating the principles of cultural behavior. (Academic year—day and evening; summer 1969)

SECOND GROUP

150 Comparative Value Systems (3)

Krulfeld

Examination of world views, conceptual systems, and value orientations of representative cultures throughout the world. (1969-70 and alternate years: fall—day)

151 Introduction to Primitive Economics (3)

Krulfeld

Comparative study of various economic organizations, including hunters and gatherers, herders and cultivators. (1970-71 and alternate years)

153 Psychological Anthropology (3)

McKay

Relevance of psychoanalytic theories to the cross-cultural study of personality. Cultural determinants of personality formation and mental health. (Fall—day)

154 Mythology and Folklore (3)

Golla

Unwritten literature as an expression of imaginative and creative thought; the place of mythology and folklore in social organization, in enculturation, and in social control. (Spring—day)

- 155 Primitive Religion (3)** Reynolds
 Conceptions of the supernatural in nonliterate societies. Examination of religious beliefs and practices. (Fall—day; summer 1969)
- 157 Primitive Social Organization (3)** Reynolds
 The analysis of the social organization of primitive peoples; kinship, economic, and political systems. (Spring—day)
- 158 Art and Culture (3)** Krulfeld
 Study of the art of tribal society, including the role of art in culture, influences upon the artist, and beliefs and practices associated with art production. (Spring—day)
- 159 Ethnoscience (3)** Staff
 Comparative study of branches of knowledge, such as astronomy, botany, mathematics, psychology, technology, and zoology, as these are empirically derived and systematically arranged in selected preindustrial societies. (1969-70 and alternate years: spring—day)
- 161 Language and Culture (3)** Golla
 Structure and semantics of systems of human communication; linguistic change; influence of language on world view. (Fall—day)
- 162 Linguistics in Anthropology (3)** Golla
 Introduction to general (descriptive and comparative) linguistics. (Fall—as arranged)
- 170 Cultures of the Caribbean (3)** Reynolds
 Study of the culture history and ways of life of Indian groups of the area during the ethnographic present. (1969-70 and alternate years: spring—day)
- 171 Native Peoples of North America (3)** Humphrey
 Comparative study of Indian groups representative of each of the culture areas of the continent. (1970-71 and alternate years)
- 172 Native Peoples of South America (3)** Staff
 Survey of Indian groups representative of each of the culture areas of the continent. (1969-70 and alternate years: fall—evening)
- 173 Cultures of the Pacific (3)** Riesenberg
 Study of the culture history and ways of the life of the native peoples of Melanesia, Micronesia, and Polynesia. (1970-71 and alternate years)
- 174 Far Eastern Communities (3)** Krulfeld
 Community study approach in anthropology as applied to selected villages in such Asian areas as China, Japan, and Malaysia. (Spring—day)
- 175 Cultures of Southeast Asia (3)** Krulfeld
 Study of representative Southeast Asian cultures from primitive groups to high civilizations. (1970-71 and alternate years)
- 176 Cultures of the Circumpolar Region (3)** Humphrey
 Survey of the social and economic adaptations to an extreme climate made by peoples of the northern sub-arctic and arctic regions of North America and Eurasia. (1969-70 and alternate years: spring—day)

- 177 **Cultures of the Near East (3)** Lewis
Study of the geographic environment, language, religion, and social structure of settled and nomadic peoples of the Near East; emphasis on the Arab world. (1970-71 and alternate years)
- 178 **Cultures of South and East Africa (3)** Lewis
Comparative examination of the history, cultural development, and contemporary problems of cultures of southern and eastern Negro Africa. (1969-70 and alternate years: fall-day)
- 179 **Cultures of West and Central Africa (3)** Lewis
Comparative examination of the history, cultural development, and contemporary problems of cultures of western and central Negro Africa. (1969-70 and alternate years: spring-day)
- 182 **New World Archeology (3)** Humphrey
Survey of North American culture history from man's entry into the Americas during the Pleistocene period until the time of the first European contacts. (Fall-day)
- 183 **Old World Archeology (3)** Humphrey
Survey of human prehistory in Europe, Africa, and Asia from the earliest hominid cultures to the beginnings of advanced agricultural civilizations and their secondary centers. (1970-71 and alternate years)
- 185 **Latin American Archeology (3)** Humphrey
The culture history of pre-Columbian Mexico and Central America from the Paleo-Indian period through the Spanish Conquest, emphasizing the origin and development of Latin American high civilizations. (1969-70 and alternate years: fall-day)
- 186 **Physical Anthropology (3)** Angel
Study of human variation past and present, seen as a product of physical and cultural evolution. (Spring-evening)
- 192 **Anthropological Theory (3)** Krulfeld
Analysis of the theoretical postulates and assumptions underlying the development of modern cultural anthropology. (Fall-day)
- 193 **Anthropological Methods (3)** Krulfeld
Approaches to library and field research. Conceptual bases and bias in the delineation of problems; in the selection, analysis, and organization of data; and in the preparation of the final report. (Spring-day)

THIRD GROUP

- 261 **Field Methods in Linguistics (3)** Golla
Principles of interviewing and recording various linguistic dialects; techniques of observation of cultural variables which influence linguistic choice. (Spring-day)
- 262 **Applied Anthropology (3)** Staff
Use of anthropological methods and techniques in such specific fields as government, business, law, and medicine. (Fall-day)

263 Culture Contact and Change (3)

Reynolds

Western impact on non-Western cultures. Workings and processes of social change as variant cultures and ethical systems interact. (1969-70 and alternate years: fall—day)

264 Museum Techniques (3)

Humphrey

Principles of collection, classification, preservation, identification, and interpretation of specimens; presentation to the public of the cultural significance of prepared specimens; research and instructional use of the museum. Field trips to area museums. (Fall—day)

265 Method and Theory in Archeology (3)

Humphrey

Analysis of field techniques, dating methods, and theoretical approaches in reconstructing and interpreting the cultures of the past, utilizing the most recent archeological techniques. (1970-71 and alternate years)

266 Technology (3)

Humphrey

Cross-cultural examination of the form, function, meaning, and use of material culture and the behavior patterns involved in its production. (1970-71 and alternate years)

267 Economic Anthropology (3)

Krulfeld

(Formerly *Primitive Economics*)

Comparative study of preindustrial systems of production, distribution, and consumption. (1970-71 and alternate years)

268 Peasant Society (3)

Krulfeld

Cross-cultural analysis of peasant societies, including an examination of their manner of functioning within their larger social, economic, and cultural context. (1969-70 and alternate years: fall—day)

273 Culture of Poverty (3)

Liebow

Cross-cultural consideration of basic assumptions about the life of the poor within pluralistic societies with the aim of gaining theoretical insights into the nature of culture itself. (Not offered 1969-70)

282 Advanced Archeology: North American Prehistory (3)

Staff

Analysis in depth of current archeological problems relating to the origin and development of aboriginal American cultures. (1970-71 and alternate years)

283 Advanced Archeology: Old World (3)

Staff

Study, in detail, of the beginnings of human culture and the development of civilization in the Old World. (1969-70 and alternate years: spring—evening)

287 Seminar: Problems in Latin American Civilization (3)

Rodriguez

Interdisciplinary seminar guided by a specialist within the methodology of his chosen discipline; each student writes a report on some aspects of a key theme (i.e., Nationalism) in Latin America's experience. Admission by permission of instructor. (Spring—day)

295 Research (arr.)

Staff

May be repeated for credit. (Fall and spring—as arranged)

299-300 Thesis Research (3-3)

Staff

(Academic year—as arranged; summer 1969)

Art

Professors D.C. Kline, W.A. MacDonald, L.P. Leite (*Chairman*)

Professorial Lecturer Grace Evans

Associate Professors Roland Fleischer, F.S. Grubar, D.H. Teller

Assistant Professors H.I. Gates, Lilien Hamilton

Instructor F.O. Griffith

Lecturers R.G. Stewart, Jane Kosler

Studio Lecturers on the Staff of the Corcoran School of Art Jack Perlmutter,

Alexander Russo, Joseph Taney, Teruo Hara, James Twitty, Berthold Schmutzhart, A.B. Stevenson, William Woodward, Thomas Downing, Robert Foster, Samuel Holvey, Edwin McGowin, Frank Wright, Harold Baskin, W.S. Dutterer, E.W. Frederick, J.F. Giampaoli, W.G. Johnson, Jack Lefkowitz, R.M. Stackhouse, Krystyna Swiecicki, D.T. Corrigan, Jerry Lake, R.G. Osuna, Evelyn Dyer

Bachelor of Arts with a major in Art History and Theory (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, or equivalent, including Art 31-32.

Required: the general requirements, pages 81-85; twenty-one semester hours, as follows: Art 101 or 102; 104 or 105; 109 or 110; 112; 113 or 114; 117 or 118; 137 or 138. In addition, nine semester hours selected from second-group courses, or from third-group courses open to undergraduates with the approval of the instructor. Philosophy 162 is recommended as a senior-year elective. Students intending to major in this field are urged to acquire a reading knowledge of a foreign language, preferably French or German, at the earliest possible convenience.

Bachelor of Arts with a major in Fine Arts (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, or equivalent, including Art 21-22 and 31-32.

Required: in addition to the general requirements, pages 81-85, twenty-seven semester hours in Fine Arts; Philosophy 162 or equivalent; six hours of Art History selected from second-group courses or from third-group courses open to undergraduates with the approval of the instructor. A maximum of twelve of the required twenty-seven hours in Fine Arts may be taken in any one of the following fields: painting, design, sculpture, graphics, and ceramics; the remainder are to be selected from three of these fields.

Bachelor of Arts with a major in Classical Archeology and Greek (Departmental).—This interdepartmental major may be arranged in conjunction with the Department of Classics. Prerequisite: the Arts and Letters curriculum, page 76, Classics 13-14, and History 39-40.

Required: in addition to the requirements, pages 81-85, twelve semester hours of second-group courses in Greek: Classics 137-38; Anthropology 183; Art 101, 102, 103, 111; History 109, 110; Philosophy 111. A reading knowledge of French or German, preferably both, is strongly recommended.

Master of Arts in the field of Art History and Criticism with concentrations in Classical Art and Archeology, American Art, Renaissance and Baroque Art, Contemporary Art, and Medieval Art.—Prerequisite: the degree of Bachelor of Arts with a major in Art History and Theory at this University, or equivalent.

Required: the general requirements, pages 89-95. As many as possible of the twenty-four semester hours in course work should be in third-group courses. A general written Master's Comprehensive Examination on the problems in the field of Art History and Criticism and a written thesis embodying the results of research on some specific topic in the history and criticism of art are also required.

Master of Arts in the field of Museology.—Prerequisite: the degree of Bachelor of Arts with a major in Art History and Theory at this University, or equivalent.

Required: the general requirements, pages 89–95. Prospective candidates should consult the Department for specific requirements.

Master of Fine Arts in the field of Painting, Sculpture, Ceramics, or Graphics.—Prerequisite: the degree of Bachelor of Arts with a major in Fine Arts in the field of Painting, Sculpture, Ceramics, or Graphics at this University, or equivalent.

Required: the general requirements, pages 89–95. In lieu of the foreign language requirement, Master of Fine Arts candidates are required to take three additional semester hours of course work selected from Art 137–38, 181–82; as many as possible of the remaining twenty-four semester hours of course work should be in third-group courses. A creative thesis (equivalent to six semester hours) in painting, sculpture, ceramics, or graphics, and a paper discussing some technical phase of the problem illustrated by the thesis are also required.

Bachelor of Arts in Education with a teaching field in Art.—Prerequisite: the Education curriculum, page 78.

Required: the Art option and professional courses listed on pages 104–5, 114.

ART HISTORY AND THEORY

FIRST GROUP

1 Art Appreciation (3)

Hamilton

Language and function of art in its various media; development of styles, aesthetic principles, theories, and the ideas in art through the ages. Primarily for nonmajors. (Fall and spring—day; summer 1969)

31–32 Survey of Western Art (3–3)

Hamilton

Survey of the arts in the Western World from prehistoric to modern times. A foundation for further study in the history of art. (Academic year—day and evening; summer 1969)

71–72 Introduction to the Arts in America (3–3)

Kline, Grubar

Painting, sculpture, and architecture of America, with selected references to crafts and popular arts. *First half:* from Colonial beginnings to the Republican Age. *Second half:* from early 19th century to the present. (Academic year—day and evening; summer 1969)

SECOND GROUP

101 Greek and Roman Architecture (3)

MacDonald

(Fall—day)

102 Greek and Roman Sculpture (3)

MacDonald

(Spring—day)

103 Classical Iconography (3)

MacDonald

Origin and development of myths in classical art. (Not offered 1969–70)

104 Renaissance Art in Italy I (3)

Evans

Early developments from the 13th to the 15th century. (Fall—day)

105 Renaissance Art in Italy II (3)

Evans

High Renaissance and Mannerism. (Summer 1969)

- 106 **Renaissance Art in the North I (3)** Fleischer
Fifteenth century painting in the Netherlands, Germany, France, Spain, and Portugal. (Fall—day)
- 107 **Renaissance Art in the North II (3)** Fleischer
Sixteenth century painting in the Netherlands, Germany, France, Spain, and Portugal. (Spring—evening)
- 108 **18th Century Art in Europe (3)** Fleischer
Development of painting, sculpture, and architecture. (Fall—day; summer 1969)
- 109 **19th Century Art in Europe (3)** Leite
Painting and sculpture from Academism to Symbolism. (Spring—day)
- 110 **Contemporary Art (3)** Leite
Painting and sculpture in 20th century Europe. (Not offered 1969–70)
- 111 **Classical Archeology (3)** MacDonald
Archeological monuments of classical civilizations, with intensive study of one or more areas selected from architecture, sculpture, painting, or minor arts. (Fall—day)
- 112 **Art of Egypt and the Ancient Orient (3)** MacDonald
Study of the art of Mesopotamia, Anatolia, Egypt, and Persia. (Spring—day; summer 1969)
- 113 **Baroque Art in Italy (3)** Leite
Development of painting, sculpture, and architecture in 16th and 17th century Italy. (Fall—evening; summer 1969)
- 114 **Baroque Art in the North (3)** Fleischer
Development in painting, sculpture, and architecture in the 16th and 17th centuries in Holland, Flanders, Spain, France, Germany, and England. (Spring—day; summer 1969)
- 115 **Christian Iconography (3)** Leite
Origins and development of Christian symbols and themes from early Christian to modern times. (Not offered 1969–70)
- 117 **Medieval Art I (3)** Evans
Architecture, sculpture, and painting of the early Christian and Byzantine periods. (Fall—day)
- 118 **Medieval Art II (3)** Evans
Architecture, sculpture, and painting of the Romanesque and Gothic periods. (Spring—day; summer 1969)
- 119 **Pre-Romanesque Art in the North (3)** Evans
The Carolingian and Merovingian periods. (Not offered 1969–70)
- 120 **Art of China and Japan (3)** Kline
Architecture, painting, and sculpture of China, Korea, and Japan. (Fall—day)

141 Interior Decoration (3)

Kline

Principles of decoration dealing with furniture designs and ensemble layout, draperies, color, accessories, and lighting. (Summer 1969)

142 House Planning (3)

Kline

Planning the contemporary house for family living, including site problems, the case plan, materials of building, and climate conditioning. (Not offered 1969-70)

145 Folk Arts in America (3)

Kline

Ceramics, woodcarving, ironwork, decorative painting, weaving, and other crafts. (Not offered 1969-70)

146 Principles of Museum Work (3)

Stewart

Introduction to the history and development of museums; problems of museum administration, connoisseurship, cataloguing, installation, conservation, and educational service. Prerequisite to graduate study in museology. Field trips to galleries and museums arranged. (Fall and spring-evening)

148 19th Century American Painting (3)

Grubar

(Fall-day)

149 19th Century American Sculpture (3)

Grubar

(Spring-day; summer 1969)

THIRD GROUP

*203 Primitive Art (3)

Kline

Arts of prehistoric and primitive man in Europe, the pre-Columbian Americas, Oceania, and Africa. (Fall-day)

*207 Modern Architecture (3)

Kline

Development of modern architecture and building technology in Europe and America from the late 19th century to the present. (Fall-day)

216 Medieval Painting (3)

Evans

Painting and the decorative arts. (Spring-evening)

220 Seminar: Baroque Art of the 17th Century (3)

Fleischer

(Spring-day)

221 Seminar: Northern Renaissance Art (3)

Fleischer

(Fall-day)

243 Seminar: American Art (3)

Kline, Grubar

Specific area announced in *Schedule of Classes*. (Fall and spring-day)

244 Seminar: 19th Century Art (3)

Leite

Specific area announced in *Schedule of Classes*. Reading knowledge of French desirable. (Fall-day)

245 Seminar: 20th Century Art (3)

Grubar, Leite

Specific area announced in *Schedule of Classes*. (Spring-evening)

*May be taken for undergraduate credit with the approval of the instructor.

- 246 **Seminar: Classical Art** (3) MacDonald
Specific area announced in *Schedule of Classes*. (Fall—day; summer 1969)
- 247 **Seminar: Medieval Art** (3) Evans
(Fall—evening)
- 248 **Independent Research** (3)
Open only to Master's degree candidates. To be arranged in consultation with individual instructors. May be repeated for credit. (Fall and spring—as arranged)
- 261 **Art Theory and Criticism** (3) Staff
History of theory and criticism; area of concentration selected from Classical, Medieval, Renaissance, and Modern fields. (Spring—day)
- 263-64 **Research Seminar in American Art** (3-3)
Selected themes offered in conjunction with the National Collection of Fine Arts and the Smithsonian Institution. Open to students admitted to graduate study in the field of Art History and Criticism with a concentration in American Art. Registration only after consultation with the Department Chairman. (Academic year—day)
- 271-72 **Museum Techniques** (6-6) Staff
The Department should be consulted for specific information. (As arranged)
- 289-90 **Thesis Research** (3-3) Staff
(Academic year—as arranged)

FINE ARTS

Fine Arts courses taught in University studios carry no material or laboratory fees; students must purchase their own materials. Laboratory and material fees for courses taught at the Corcoran School of Art are stated in the course description and are payable at the School.

Courses designated CSA are taught at the Corcoran School of Art.

Departmental prerequisite: Art 21-22 or permission of Department Chairman is prerequisite to all other studio courses in Art.

FIRST GROUP

- *21-22 **Design I: Basic** (3-3) Staff
Fundamental studies of principles and elements of design. *First half* study of two-dimensional design. *Second half*: three-dimensional studies (First half and second half: fall and spring—as arranged; summer 1969)
- 41-42 **Drawing I** (3-3) CSA Stackhouse, Dutterer, McGowan,
Wright, Schmutzhart
Mechanical and visual perspective. Still life, landscape, interior and object drawing, figure drawing, collage, elements of composition, spatial illusion, and graphic communication of ideas. (Academic year—day and evening; summer 1969)

* Required of all Fine Arts majors.

51-52 Ceramics I (3-3) CSA

Basic techniques for clay preparation, hand forming, wheel throwing, and the application of slip glazes and vitreous glazes through workshop and illustrated lectures. Laboratory fee, \$45 a semester. (Academic year—day and evening; summer 1969)

57-58 Graphics I (3-3)

(Formerly Printmaking I)

Griffith

Exploration of the methods of intaglio, relief, block printing, lithography, and other composite processes. (Academic year—day and evening)

61-62 Watercolor (3-3) CSA

Stevenson

Transparent and opaque watercolor, drawing fundamentals. (Academic year—day; summer 1969—Art 61)

65-66 Painting I (3-3) CSA

Woodward

Basic color composition and fundamental painting techniques. (Academic year—day and evening; summer 1969)

81-82 Sculpture I (3-3) CSA

Schmutzhart, Corrigan

Basic sculptural and casting techniques, new materials, stone and wood carving. Laboratory fee, \$10 a semester. (Academic year—day and evening; summer 1969)

SECOND GROUP

Second-group Art courses may be repeated for credit with the approval of the Department.

***121-22 Design II: Structured (3 or 6-3 or 6)**

Gates

Structured course that extends the student's design experience through a series of problems involved with both two- and three-dimensional media. Emphasis on problem solving through experimentation with materials and tools. (Academic year—day)

123-24 Design III: Individual Problems (3-3)

Staff

Emphasis on the individual student and the problems and materials that specifically interest him in any area of design. Prerequisite: Art 121-22. (Academic year—as arranged)

†125-26 Painting II (3 or 6-3 or 6) CSA

Twitty, Downing

Development of basic concepts carried into personal statement. Study of stylistic approaches from realistic to abstract. (Academic year—day and evening; summer 1969—Art 125-26 (3-3))

†127-28 Painting III (3 or 6-3 or 6) CSA

Russo, Twitty, Downing

Exploratory efforts in the development of style, using advanced methods and materials. (Academic year—day and evening; summer 1969—Art 127-28 (3-3))

†131-32 Ceramics II (3 or 6-3 or 6) CSA

Hara

Basic techniques in clay and glaze formation, advanced wheel throwing and hand forming. Laboratory fee each semester: \$45 for 3 semester

* Fine Arts majors with concentrations in design may elect 6 semester hours of credit.
† Fine Arts majors and Master of Fine Arts candidates should elect 6 semester hours of credit.

hours; \$60 for 6 semester hours. (Academic year—day and evening; summer 1969—Art 131-32 (3-3))

137-38 Workshop in Materials, Methods, and Techniques (3-3) CSA

Russo, Schmutzhart

Drawing in charcoal, crayon, and pen; painting and preparation of grounds in tempera, encaustic, fresco buono, oil, watercolor, polymer, and mixed techniques; graphic techniques in woodcut, engraving, etching; modeling in clay and carving in wood and stone; mosaic. (First half and second half: fall and spring—day; summer 1969—Art 137)

139-40 Design Workshop (3-3)

Gates

Exploration of design possibilities in wood, metal, textile, plastics, and other materials. (First half: summer 1969, second half: not offered 1969-70)

143-44 Serigraphy (3-3)

Teller

Advanced problems in serigraphy; emphasis on its aesthetic possibilities. Prerequisite: Art 57-58. (Academic year—day; summer 1969)

***151-52 Ceramics III (3 or 6-3 or 6) CSA**

Hara

Glaze calculation, experimentation in reduction firing, individual problems in formation techniques, and problems in series production for the studio artist. Advanced decorating and finishing techniques. Laboratory fee each semester: \$45 for 3 semester hours; \$60 for 6 semester hours (Academic year—day and evening)

***153-54 Graphics II (3 or 6-3 or 6)**

Griffith

(Formerly Printmaking II)

Advanced relief, intaglio, lithographic, and other composite processes. Prerequisite: Art 57-58 or equivalent. (Academic year—day; summer 1969—Art 153 (3))

***157-58 Graphics III (3 or 6-3 or 6)**

Griffith

(Formerly Printmaking III)

Exploration of combined techniques and mixed media. Prerequisite: Art 153-54 or equivalent. (Academic year—day; summer 1969—Art 157-58 (3-3))

159-60 Drawing II (3-3) CSA

Russo, Giampaoli

Study of the potential of design in growth, structure, form, texture, organization, and color; mechanics of anatomy and figure drawing (Academic year—day and evening; summer 1969)

161-62 Fundamentals of Photography (3-3) CSA

Lake

Introduction to the theory and practice of photography. Laboratory fee: \$20 a semester. (First half and second half: fall and spring—day; summer 1969—Art 161)

163-64 Welding (3-3) CSA

Special problems in welded sculpture. (Offered last time summer 1969)

* Fine Arts majors and Master of Fine Arts candidates should elect 6 semester hours of credit

- 165-66 Painting, Drawing, Composition (3-3) CSA** Giampaoli, Schmutzhart
Design and representation in drawing, painting, and pastel. Disciplined study of nature and principles of the Renaissance and 19th century masters. (Academic year—day and evening)
- 167 Advertising Design: Visual Communication (3) CSA** Taney and Staff
Development of concepts and layouts incorporating typography, illustrations, or photographs, for brochures, bookjackets, displays, title graphics for film media. (Fall and spring—day and evening)
- 168 Advertising Design: Advanced Visual Communication (3) CSA** Taney and Staff
Development of graphic designs, layouts, professional formats for magazine spreads, posters, advertisements, trademarks, letterheads, packages. Development of portfolio of professional quality. (Fall and spring—day and evening)
- 169 Advertising Design: Typography (3) CSA** Lefkowitz
Imaginative use of words in advertising and editorial design: development of typographic process, type specification, various type styles, and methods. Use of a type laboratory acquaints the student with the special problems of the typographer. Special attention to studies in the compatibility of words and pictures. (Fall and spring—day)
- 170 Advertising Design: Illustration and Typography (3) CSA** Lefkowitz
Experiment with various illustration techniques in advertising and editorial design. Special problems in typography. Study of reproduction processes to prepare art work for printing. (Fall and spring—day)
- 171-72 Calligraphy and Lettering (3-3) CSA** Foster
Consideration of the basic alphabets and their use in calligraphy, lettering, and typography. (Academic year—day; summer 1969)
- 173-74 Advanced Calligraphy and Lettering (3-3) CSA** Foster
Design and appropriate use of present-day letter forms. Consideration of type faces and use in contemporary typography. (Academic year—day)
- 175-76 Design Projects (3-3) CSA** Holvey
Advanced problems in various areas, including creative projects. (Academic year—day)
- 177-78 Rendering (3-3) CSA** Holvey
Methods and techniques of visual representation as used in the professional design fields, with a survey of modern illustrative styles. (Academic year—day)
- *179-80 Sculpture II (3 or 6-3 or 6) CSA** Schmutzhart, Corrigan
Three-dimensional design, assemblages, bas-relief techniques, use of color, metal techniques, wood, new materials. Laboratory fee, \$10 a semester. (Academic year—day and evening; summer 1969—Art 179-80 (3-3))
- *181-82 New Media (3-3) CSA** McGowin
New media: plastic, lights, epoxy, rubber, styrafoam, and kinetic machinery. (Academic year—day)

* Fine Arts majors and Master of Fine Arts candidates should elect 6 semester hours of credit.

187-88 Advertising Design: Photography (3-3) CSA

Lake

Theory and practice of photography as it relates to communication design. Laboratory fee, \$20 a semester. (Academic year—day and evening)

***189-90 Sculpture III (3 or 6-3 or 6) CSA**

Schmutzhart, Corrigan

Relationship of sculpture to architecture. Reliefs and work on a monumental scale. Selected students experiment in bronze. (Academic year—day and evening; summer 1969—Art 189-90 (3-3))

191-92 Advertising Design: Advanced Photography (3-3) CSA

Lake

Photographic techniques as a creative medium and an instrument for stimulating visual communication. Laboratory fee, \$20. (Academic year—day and evening; summer 1969—Art 191)

193 Film Making (3) CSA

Osuna

Designed for the student with limited knowledge of the techniques and procedures in film making. The student will create his own short film. Laboratory fee, \$90. (Fall and spring—evening)

THIRD GROUP

All third-group Art courses may be repeated for credit with the approval of the Department.

***231-32 Design IV (3 or 6-3 or 6)**

Gates

New media and techniques in three-dimensional design. (Academic year—as arranged)

***234 Design V (3 or 6)**

Staff

Presentation, model building, and specifications of materials in three-dimensional problems. (Academic year—as arranged)

***235 Design VI (3 or 6)**

Teller

Designing and executing textiles using the techniques of silk screen, block print, and batik. (Academic year—as arranged)

249 Theory of Design (3)

Teller

Application of design principles to painting, architecture, sculpture, and minor arts of today. Relationship of design principles to the contemporary artist and his work. Open to undergraduate students with permission of instructor. (Fall—as arranged)

***251-52 Ceramics IV (3 or 6-3 or 6) CSA**

Hara

Personal glaze and clay formulation. Methods of instruction for student who plans to teach. Laboratory fee each semester; \$45 for 3 semester hours; \$60 for 6 semester hours. (Academic year—day and evening)

***253 Ceramics V (3 or 6) CSA**

Hara

Laboratory fee: \$45 for 3 semester hours; \$60 for 6 semester hours. (Fall and spring—as arranged)

***255-56 Graphics IV: Serigraphy (3 or 6-3 or 6)**

Teller

(Academic year—as arranged)

* Fine Arts majors and Master of Fine Arts candidates should elect 6 semester hours of credit

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|--|-------------|
| *257-58 Graphics V: Etching and Engraving (3 or 6-3 or 6) (Academic year—as arranged) | Griffith |
| *259 Graphics VI: Lithography (3 or 6) (Fall and spring—as arranged) | Griffith |
| *260 Graphics VII: Relief Printing (3 or 6) (Fall and spring—as arranged) | Griffith |
| *265-66 Painting IV (3 or 6-3 or 6) CSA (Academic year—day and evening; summer 1969—Art 265-66 (3-3)) | Staff |
| *275 Painting V (3 or 6) CSA (Fall and spring—as arranged; summer 1969—Art 275 (3)) | Staff |
| *279-80 Sculpture IV (3 or 6-3 or 6) CSA (Academic year—as arranged; summer 1969—Art 279-80 (3-3)) | Schmutzhart |
| *281 Sculpture V (3 or 6) CSA (Fall and spring—as arranged; summer 1969—Art 281 (3)) | Staff |
| 299-300 Thesis Research (3-3) (Academic year—as arranged) | Staff |

Biochemistry

Professors C.R. Treadwell (*Chairman*), B.W. Smith, G.V. Vahouny
Professorial Lecturers Sidney Udenfriend (*Intermediary Metabolism*), W.W. Burr, Jr. (*Isotopes*), R.W. Albers, Roscoe Brady, Jr., Arnold Schaefer, Sidney Shifrin, Edward Steers, Jr., W.F. Anderson, Pedro Cuatrecasas (*Enzymology*), R.P. Erickson, H.L. Ozer, Gordon Guroff
Associate Professor J.M. Bailey
Special Lecturers Walter Mertz (*Inorganic Metabolism*), Herbert Weissbach (*Vitamins*), J.C. Smith, Jr.

Master of Science in the field of Biochemistry.—Prerequisite: a Bachelor's degree. The undergraduate program must have included the following courses, or equivalent: Biological Sciences 11-12; Chemistry 11-12, 22, 51-52, 53-54; Physics 1, 2.

Required: the general requirements, pages 89-95, including Biochemistry 221-22, 227, 299-300. The remaining courses are to be selected from Biochemistry 224, 232, 241, 262, 295; or, with the approval of the adviser, from graduate courses in Microbiology, Chemistry, Physiology, or Pharmacology. It is usually not possible to arrange courses and research so that the student can be assured of completing all of the required work in one academic year.

Doctor of Philosophy fields of study in Biochemistry: Amino Acid Metabolism; Animal Nutrition; Biochemical Evolution; Biochemistry of Cancer; Biochemistry of Tissue Culture; Carbohydrate Metabolism; Chemistry and Metabolism of Carbohydrates, Lipids, Proteins; Complex Lipids; Intermediary Metabolism; Lipids; Metabolism of Purines and Pyrimidines; Metabolic Relationships of Insulin; Protein

* Fine Arts majors and Master of Fine Arts candidates should elect 6 semester hours of credit.

204 COURSES OF INSTRUCTION

Biosynthesis; Protein Metabolism; Endocrinology; Metabolism; Metabolism of Connective Tissue; Nutrition; Tissue Respiration; and Vitamins.—See pages 89–93, 95–97, for requirements for the degree.

221–22 General Biochemistry (4–4) Vahouny
Lectures and laboratory. Prerequisite: Chemistry 52, 54. Material fee, \$20 a semester. (Academic year—day)

224 Biochemistry of Enzymes (1) Staff
Biochemistry of enzymes and enzyme reactions. Prerequisite: Biochemistry 221. (Spring—day)

*225 Biochemical Procedures (3) B. Smith and Staff
Laboratory course. Material fee, \$16 a semester. (Fall and spring—as arranged)

*227 Biochemistry Seminar (1) Staff
Current literature in biochemistry. (Fall and spring—day)

232 Proteins and Amino Acids (1) Steers, Shifrin
Prerequisite: Biochemistry 221. (Spring—Saturday morning).

241 Isotopes (3) Burr
Theoretical characterization of isotopes and their applications in biology. Attention given to counting, health physics and radiation safety, autoradiography, chromatography. Laboratory fee, \$16. (Spring—day)

251 Carbohydrate Metabolism (1)
Prerequisite: Biochemistry 222. (1969–70 and alternate years: spring—day)

252 Biochemistry of the Brain (1) Albers, Brady
Primarily for medical students; open to limited number of graduate students. Recent biochemical developments in structure, functions, and metabolic processes unique to the brain. (Spring—day)

254 Human Nutrition (1)
Primarily for medical students; open to limited number of graduate students. Application of nutritional principles in humans. (Spring—day)

256 Biochemistry of Organ Function (1)
Primarily for medical students; open to limited number of graduate students. Emphasis on biochemical processes unique to particular organ systems; application of these processes to evaluation of function. (Spring—day)

258 Inherited Metabolic Diseases (1) Ozer, Erickson
Primarily for medical students; open to limited number of graduate students. Contribution of molecular biology to understanding of human mutations and hereditary diseases. Specific disease states and genetics of protein structure discussed. Prerequisite: Biochemistry 222. (Spring—Saturday morning)

* Content differs each time the course is offered; may be repeated for credit.

260 Biochemistry of Steroids (1)

Primarily for medical students; open to limited number of graduate students. Basic chemistry of the steroids, pathways of biosynthesis and metabolism, regulatory mechanisms, physiologic effects, clinical measurement of endogenous steroids, clinical manifestations of steroid imbalance, steroid changes in pregnancy, and steroid therapy. (Spring—day)

***262 Biochemistry of the Lipids (1)**

Vahouny

Research techniques for study of lipid biochemistry. 1969-70 and alternate years: chemistry, properties, occurrence of important classes of biological lipids. 1970-71 and alternate years: metabolism of lipids, including digestion, energy production, biosynthesis, function in specialized tissues and subcellular structures. (Spring—day)

266 Biochemical Genetics (1)

Anderson

Primarily for medical students; open to limited number of graduate students. (Spring—Saturday morning)

***295 Research in Biochemistry (arr.)**

Staff

Participation in a project under investigation in the Department or one in a related field suggested by the student and approved by the Staff. (Fall and spring—as arranged)

299-300 Thesis Research (3-3)

Staff

(Academic year—as arranged; summer 1969)

398 Advanced Reading and Research (arr.)

Staff

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

399 Dissertation Research (arr.)

Staff

Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Biological Sciences

Professors I.B. Hansen, Edith Mortensen, S.C. Munson, A.H. Desmond (*Chairman*), R.L. Weintraub

Professorial Lecturers K.C. Kates, L.B. Smith

Associate Professors Caroline Adams, Kittie Parker, D.S. Douglas, S.O. Schiff, L.J. Tilly

Associate Professorial Lecturers J.R. Buchheit, R.S. Sigafos, W.A. Shropshire, Jr.

Assistant Professor M.J. Landy

Assistant Professorial Lecturer P.E. Spiegler

Lecturers Jessie Dickens, P.L. Simon, Lois Earll

Adjunct Lecturers T.E. Bowman, R.F. Cressey, W.D. Hope, M.L. Jones, L.S. Kornicker, D.L. Pawson, H.A. Rehder, Joseph Rosewater, C.F. Roper, D.F. Squires, F.A. Chace, Jr.

* Content differs each time the course is offered; may be repeated for credit.

*Bachelor of Arts or Bachelor of Science with a major in Biology (Departmental).—*Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 76, including Biological Sciences 11-12, or former 1-2, or equivalent; Chemistry 11-12.

Required: in addition to the general requirements, pages 81-85, a minimum of twenty-four semester hours of second-group courses which should include at least six hours in Biology, six in Botany, six in Zoology; and Biological Sciences 181-82.

*Bachelor of Arts or Bachelor of Science with a major in Botany (Departmental).—*Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 76, including Biological Sciences 11-12, or former 1-2, or equivalent; Chemistry 11-12.

Required: in addition to the general requirements, pages 81-85, a minimum of twenty-four semester hours of second-group courses in Botany or in a combination of Botany and Biology; and Biological Sciences 181-82.

*Bachelor of Arts or Bachelor of Science with a major in Zoology (Departmental).—*Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 76, including Biological Sciences 11-12, or former 1-2, or equivalent; Chemistry 11-12.

Required: in addition to the general requirements, pages 81-85, a minimum of twenty-four semester hours of second-group courses in Zoology or Biology; and Biological Sciences 181-82.

*Master of Science in the field of Biology.—*Prerequisite: the equivalent of a Bachelor's degree from this University with a major in Biology, Botany, or Zoology.

Required: the general requirements, pages 89-95.

*Master of Science in the field of Botany.—*Prerequisite: the equivalent of a Bachelor's degree from this University with a major in Botany or Biology.

Required: the general requirements, pages 89-95.

*Master of Science in the field of Zoology.—*Prerequisite: the equivalent of a Bachelor's degree from this University with a major in Zoology or Biology.

Required: the general requirements, pages 89-95.

*Doctor of Philosophy fields of study in Biology: Cell Physiology, Cytogenetics, Cytology, and Molecular Genetics.—*See pages 89-93, 95-97, for requirements for the degree.

*Doctor of Philosophy fields of study in Botany: Cytogenetics, Microbial Genetics, Mycology, Paleobotany, Photobiology, Plant Ecology, Plant Pathology, Plant Physiology—Microorganisms, Plant Physiology—Vascular Plants, Taxonomy, and Vir-ology.—*See pages 89-93, 95-97, for requirements for the degree.

*Doctor of Philosophy fields of study in Zoology: Aquatic Ecology; Comparative Physiology; Entomology—Insect Physiology; Herpetology; Histophysiology; Radiation Biology; Taxonomy, Anatomy, and Physiology of Mollusks; Vertebrate Anatomy and Taxonomy; Vertebrate Embryology and Morphogenesis; and Vertebrate Ichthyology.—*See pages 89-93, 95-97, for requirements for the degree.

*Doctor of Philosophy in the field of Biophysics (an interdepartmental field offered by the departments of Biological Sciences, Physics, and Physiology, see pages 212-15).—*See pages 89-93, 95-97, for requirements for the degree.

*Bachelor of Arts in Education with a teaching field in Biology.—*Prerequisite: the Education curriculum, page 78.

Required: the Biology option and the professional courses listed on pages 105, 114.

Departmental prerequisite: Biological Sciences 11-12 or former 1-2 is prerequisite to all second-group courses (exception: Biological Sciences 163) in Biology, Botany, and Zoology, except by permission of the instructor.

BIOLOGY

FIRST GROUP

1-2 Introductory Biology (4-4)

Munson and Staff

Lecture (3 hours), laboratory (3 hours). Introductory course leading to all second-and third-group courses in biology, botany, and zoology; also provides the nonscience student with an understanding of the life sciences. Material fee, \$10 a semester. (Offered last time summer 1969)

3-4 Introductory Biology for Nonscience Majors (3-3)

Schiff

Lecture (2 hours), laboratory (2 hours). Survey of biological principles; emphasis on man as a functional organism in his environment. Material fee, \$10 a semester. (Academic year—day and evening)

11-12 Introductory Biology for Science Majors (4-4)

Staff

Lecture (3 hours), laboratory (3 hours). Biological principles and problems designed to furnish a base for advanced studies in biology and related sciences. Required of all prospective biology, botany, and zoology majors. Material fee, \$10 a semester. (Academic year—day)

SECOND GROUP

108 Organic Evolution (3)

Munson

Theories of organic evolution and present ideas on principal lines of development in the plant and animal kingdoms; review of mechanisms involved in the process. (Fall and spring—day)

112 Bacteriology (4)

Weintraub

Lecture (2 hours), laboratory (4 hours). Introduction to structure, activities, biological roles, and industrial uses of bacteria and some related organisms. Prerequisite: one year of chemistry. Material fee, \$11. (Fall—day)

115 Cytology (4)

Schiff

Lecture (1 hour), laboratory (4 hours). Morphological and physiochemical properties of plant and animal cells and their components. Analysis of slides, cytological techniques, and preparation of slides. Recommended: one year of chemistry. Material fee, \$11. (Summer 1969)

118 Advanced Cytology (3)

Schiff

Lecture (1 hour), laboratory (4 hours). Cell mechanisms, including chromosome pairing and movement, bacterial, viral, and human cytogenetics, sex determination, chromosome abnormalities, and cytology of cancer cells. Laboratory will be in the nature of a cytological project, to be selected by the student with the concurrence of the instructor. Prerequisite: Biological Sciences 115. Material fee, \$11. (Spring—day)

119 Cell Biochemistry (4)

Weintraub

Lecture (2 hours), laboratory (3 hours). Introduction to composition and metabolism of generalized cells of plants, animals, and microorganisms. Prerequisite: Chemistry 11-12; 50 or 51-52; or equivalent. Material fee, \$11. (Not offered 1969-70)

120 Cell Physiology (4)

Weintraub

Lecture (2 hours), laboratory (3 hours). Study of cell processes including absorption, excretion, growth, division, contraction, conduction, locomotion, and photosynthesis. Prerequisite: Biological Sciences 119 or permission of instructor. Material fee, \$11. (Spring—evening)

127 Genetics (4)

Lecture (3 hours), laboratory (2 hours). Introductory course. Basic aspects of transmission of genetic traits with particular reference to the chemical basis of heredity and gene action. Material fee, \$8. (Fall and spring—day; summer 1969)

138 Advanced Genetics (3)

Emphasis on genetic studies with bacteria, bacteriophage, certain fungi (biochemical genetics), and some aspects of human genetics. Original papers in the field of chromosome mechanics and cytogenetics will be considered. Prerequisite: introductory course in genetics. (Spring—day)

167 Radiation Biology (3)

Schiff

Nature of radioactive particles and emissions; their effects on biological materials, chiefly at the cellular level; genetic effects of radiation. Recommended but not required: two years of biological sciences and chemistry or physics. (Fall—day)

171 Undergraduate Research (arr.)

Staff

Admission by permission of the staff member concerned. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

181-82 Senior Seminar (1-1)

Staff

An integrating and coordinating course required of seniors majoring in Biology, Botany, or Zoology. (Academic year—day)

THIRD GROUP**206 Seminar: Radiation Biology (3)**

Schiff

Actions of different kinds of radiation on living material at subcellular, cellular, and organismal levels; effects of environmental alterations on radiation-induced damage; practical considerations of exposure to radioactivity. Prerequisite: Biological Sciences 167 or equivalent. (Spring—evening)

207 Seminar: Origin of Life (3)

Weintraub

(1969-70 and alternate years: fall—evening)

219 Seminar: Topics in Cell Biochemistry (3)

Weintraub

(1970-71 and alternate years)

220 Seminar: Cell Physiology (3)

Shropshire

Review in depth of selected topics. (1969-70 and alternate years: spring—evening)

227 Seminar: Genetics (3)

(Not offered 1969-70)

BIOLOGICAL SCIENCES 209

295 **Research** (arr.) Staff
Investigation of special problems. May be repeated for credit.
(Fall and spring—as arranged; summer 1969)

299–300 **Thesis Research** (3–3) Staff
(Academic year—as arranged; summer 1969)

FOURTH GROUP

398 **Advanced Reading and Research** (arr.) Staff
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

399 **Dissertation Research** (arr.) Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit.
(Fall and spring—as arranged; summer 1969)

BOTANY

SECOND GROUP

105 **Local Flora** (3) Parker
(Formerly *Field Botany—Seed Plants*)
Lecture (2 hours), laboratory and field (4 hours). Field and laboratory studies on local flora; emphasis on the woody plants. Material fee, \$5.
(Fall—day)

106 **Field Botany—Lower Plants** (3) Adams
Lecture (1 hour), laboratory and field (4 hours). Primarily for non-specialists, emphasizing algae, mosses, and ferns. (Not offered 1969–70)

109 **Structure of Seed Plants** (3) Adams
(Formerly *Plant Morphology*)
Lecture (1 hour), laboratory (4 hours). Morphology, anatomy, and histology of seed plants. Material fee, \$8. (Fall—day)

110 **Lower Plants** (3) Adams
(Formerly *Plant Morphology*)
Lecture (1 hour), laboratory (4 hours). Structure, life cycle, phylogeny, ecology, and economic importance of algae, fungi, mosses, and ferns. Material fee, \$8. (Spring—day)

125 **Flowering Plants** (3) Parker
(Formerly *Plant Taxonomy* (4))
Lecture (2 hours), laboratory and field (4 hours). Origin, development, phylogeny, and principles of classification of flowering plants. Material fee, \$5. (Spring—day)

132 **Mycology** (4)
Lecture (2 hours), laboratory (3 hours). Material fee, \$8. (1970–71 and alternate years)

134 Plant Pathology (4)

Lecture (2 hours), laboratory (3 hours). Material fee, \$8. (Not offered 1969-70)

135 Plant Physiology (4)

Weintraub

Lecture (2 hours), laboratory (4 hours). Physiology of seed plants with emphasis on growth, development, tropisms, and reproduction. Prerequisite: Chemistry 11-12. Biological Sciences 119 and Chemistry 50 or 51-52 are recommended. Material fee, \$11. (Spring-day)

141 Plant Ecology (4)

Sigafoos

Lecture (2 hours), laboratory (4 hours). (1970-71 and alternate years)

THIRD GROUP

221 Seminar: Plant Taxonomy (3)

Parker

(1969-70 and alternate years: fall-evening)

235 Seminar: Plant Physiology (3)

(1970-71 and alternate years)

242 Seminar: Plant Ecology (3)

Sigafoos

(1969-70 and alternate years: spring-evening)

299-300 Thesis Research (3-3)

Staff

(Academic year—as arranged; summer 1969)

ZOOLOGY

SECOND GROUP

101-2 Invertebrate Zoology (3-3)

Mortensen

Lecture (1 hour), laboratory (4 hours). Systematic study of invertebrate forms, including morphology, physiology, classification, life histories, and phylogenetic relationships. Material fee, \$11 a semester (Academic year—day)

104 Comparative Vertebrate Anatomy (4)

Landy

Lecture (2 hours), laboratory (4 hours). Origin, early history, gross and comparative anatomy of vertebrates. Dissection of representative present-day forms. Material fee, \$11. (1969-70 and alternate years: fall and spring—day; 1970-71 and alternate years: fall—day and evening, spring—day)

143 Animal Ecology (4)

Tilly

Lecture (3 hours), laboratory and field (3 hours). Material fee, \$8. (Fall—day)

144 Aquatic Ecology (4)

Tilly

Lecture (3 hours), laboratory and field (3 hours). Principles applied to aquatic systems with special references to physicochemical properties, typical habitats and communities. Prerequisite: Biological Sciences 143 or permission of instructor. Laboratory fee, \$8. (Spring—day)

- 145 Introduction to Vertebrate Embryology (3)** **Hansen**
Lecture (1 hour), laboratory (4 hours). Origin and early development of the individual, formation of organ systems. Emphasis on frog, chick, and pig, with reference to human embryo. Material fee, \$8. (1969-70 and alternate years: fall—day and evening, spring—day; 1970-71 and alternate years: fall and spring—day; summer 1969)
- 148 Histology (4)** **Desmond**
Lecture (2 hours), laboratory (4 hours). Introduction to microscopical anatomy of normal tissues and organs. Material fee, \$8. (1969-70 and alternate years: fall—day, spring—evening; 1970-71 and alternate years: fall and spring—day; summer 1969)
- 152 Protozoa (3)** **Mortensen**
Lecture (1 hour), laboratory (4 hours). Introduction to protozoa: classification, life histories, and physiology; emphasis on free-living types. Material fee, \$8. (1969-70 and alternate years: fall—evening)
- 154 Vertebrate Zoology (4)** **Landy**
Lecture and discussion (2 hours), laboratory and field (4 hours). Vertebrate morphology and natural history; discussion of variation and adaptation in vertebrate forms, including identification, ecology, and natural history of vertebrates with emphasis on the vertebrates of the Middle Atlantic States. Prerequisite: Biological Sciences 104 or permission of instructor. Material fee, \$8. (Spring—evening)
- 155 Parasitology (3)** **Kates**
Lecture (1 hour), laboratory (4 hours). Introduction to animal parasitology; survey of parasitic types from protozoa through arthropods. Material fee, \$8. (Not offered 1969-70)
- 157 Comparative Endocrinology (3)** **Desmond**
Endocrine systems of vertebrate classes. Differences and similarities between endocrine mechanisms of fish, amphibians, reptiles, birds, and mammals, to illustrate broad trends of evolution in endocrine systems. (Fall—day)
- 161 Entomology (3)** **Munson**
Lecture (2 hours), laboratory (2 hours). Elementary morphology, physiology, and ecology of insects; introduction to taxonomy of more important groups. Material fee, \$8. (1969-70 and alternate years: fall—day)
- 162 Insect Physiology (3)** **Munson**
Lectures and laboratory on physiology of insects. Admission by permission of instructor. Material fee, \$8. (1969-70 and alternate years: spring—day)
- 163 Human Physiology (4)** **Douglas**
Lecture (3 hours), laboratory (3 hours). Introduction to the function of organ systems of the human body. Intended for nonbiology majors. Prerequisite: Biological Sciences 3-4 or equivalent. Material fee, \$11. (Fall—day)

164 Vertebrate Physiology (4)

Douglas

Lecture (3 hours), laboratory (3 hours). Survey of the chemical and physical basis of function in vertebrate organ systems. Experiments with a variety of animals illustrate classical as well as modern approaches to animal physiology. Background in biology and chemistry strongly recommended. Material fee, \$11. (Spring—day)

THIRD GROUP**204 Seminar: Invertebrate Zoology (3)**

Mortensen

Study of original publications on hormones of invertebrate animals. (1970-71 and alternate years)

245 Histochemistry (3)

Desmond

Theory and application of chemical techniques in determining changes in the amount and distribution of inorganic and organic constituents of tissues during different physiological and pathological conditions. (1969-70 and alternate years: spring—evening)

247 Morphogenesis (3)

Hansen

Lectures and reports on experimental morphology. Emphasis on early embryonic development. Prerequisite: Biological Sciences 145 or equivalent (1970-71 and alternate years)

250 Seminar: Regeneration (3)

Hansen

Discussions and reports on theories and experimental evidence in both vertebrate and invertebrate animals. (1970-71 and alternate years)

251 Seminar: Vertebrate Zoology (3)

Desmond

Study of current publications in the field of histophysiology. (1970-71 and alternate years)

265 Comparative Animal Physiology (3)

Douglas

Introduction to study of the physiological basis of adaptation of animals to environments. Attention given to animals with ability to live under unusual or extreme environmental conditions. (Fall—evening)

299-300 Thesis Research (3-3)

Staff

(Academic year—as arranged; summer 1969)

Biology

See "Biological Sciences."

Biophysics—Graduate Study**COMMITTEE ON BIOPHYSICS 1968-69**

C.S. Tidball (*Chairman*), Marie Cassidy, Marvin Eisenberg, I.B. Hansen, H.H. Hobbs, Herbert Jehle

The Graduate School of Arts and Sciences offers an interdepartmental program leading to the degree of Doctor of Philosophy in the field of Biophysics. This interdepartmental program is directed by the departments of Biological Sciences, Physics, and Physiology. Entry into this program may be made through any one of these departments; however, the final program must be approved by the Committee on Biophysics. Interested students should consult either the Chairman of the Committee on Biophysics or the chairman of the department of Biological Sciences, Physics, or Physiology.

No field of undergraduate study is stipulated; however, the undergraduate program must have included the following courses, or equivalent: Biological Sciences 11-12; Chemistry 22; Mathematics 24 or 33; Physics 32, 52. In addition, candidates should present advanced undergraduate work in either chemistry, mathematics, or physics.

Doctor of Philosophy fields of study in Biophysics: Electron Microscopy, Experimental Biophysics, Instrumentation, Membrane Physics, Membrane Transport, Molecular Biology, Neurobiology, and Theoretical Biophysics.—See pages 89-93, 95-97, for requirements for the degree.

The program will normally be selected from the following courses.

ANATOMY

- | | |
|---|-------------------|
| 205 <i>Microscopic Anatomy</i> (3) | Telford and Staff |
| 260 <i>Electron Microscopy in Cellular Biology—Lecture</i> (1) | Blanchette |
| 261 <i>Electron Microscopy in Cellular Biology—Laboratory</i> (2) | Blanchette |

APPLIED SCIENCE*

- | | |
|---|-------|
| 113-14 <i>Engineering Analysis I-II</i> (3-3) | Staff |
| 211 <i>Mathematical Methods in Applied Science I</i> (3) | Staff |
| 212 <i>Mathematical Methods in Applied Science II</i> (3) | Staff |

BIOCHEMISTRY

- | | |
|---|----------------|
| 221-22 <i>General Biochemistry</i> (4-4) | Vahouny |
| 241 <i>Isotopes</i> (3) | Burr |
| 258 <i>Inherited Metabolic Diseases</i> (1) | Ozer, Erickson |

BIOLOGICAL SCIENCES

BIOLOGY

- | | |
|----------------------------------|-----------|
| 112 <i>Bacteriology</i> (4) | Weintraub |
| 115 <i>Cytology</i> (4) | Schiff |
| 118 <i>Advanced Cytology</i> (3) | Schiff |
| 119 <i>Cell Biochemistry</i> (4) | Weintraub |
| 120 <i>Cell Physiology</i> (4) | Weintraub |
| 167 <i>Radiation Biology</i> (3) | Schiff |

ZOOLOGY

- | | |
|--------------------------------------|---------|
| 148 <i>Histology</i> (4) | Desmond |
| 164 <i>Vertebrate Physiology</i> (4) | Douglas |
| 245 <i>Histochemistry</i> (3) | Desmond |

* See the School of Engineering and Applied Science Catalogue.

214 COURSES OF INSTRUCTION

CHEMISTRY

- 111-12 *Physical Chemistry* (3-3)
- 113-14 *Physicochemical Measurements* (2-2)
- 122 *Instrumental Analysis Lectures* (2)
- 213 *Chemical Thermodynamics* (3)

Wood
Schmidt, Rowley
Schmidt
Wood

ELECTRICAL ENGINEERING*

- 62 *Introductory Electrical Engineering Laboratory* (3)
- 153 *Design of Switching Systems* (3)
- 154 *Digital Computer Design* (3)
- 157 *Machine and Assembly Language Programming* (3)
- 163-64 *Electrical Engineering Laboratory I-II* (3-3)
- 256 *Analog and Hybrid Computers* (3)
- 257 *Digital Computer Programming Systems* (3)
- 281 *Electronic Measurements in Medicine* (3)
- 282 *Instrumentation in Medical Electronics* (3)

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MATHEMATICS

- 111 *Mathematics for Engineers and Physicists I* (3)
- 112 *Mathematics for Engineers and Physicists II* (3)
- 139 *Advanced Calculus I* (3)
- 140 *Advanced Calculus II* (3)
- 142 *Theory of Differential Equations* (3)

Staff
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Staff
Staff

MEASUREMENT SCIENCE*

- 131 *Measurement Laboratory* (3)

Staff

MECHANICAL ENGINEERING*

- 280 *Advanced Thermodynamics* (3)
- 295 *Statistical Thermodynamics* (3)

Staff
Staff

MICROBIOLOGY

- 211 *Microbiology* (4)
- 231 *Cellular Immunology* (2)
- 233 *Molecular Biology of Viruses* (4)
- 257 *Immunochemistry* (3)

Staff
Staff
Huang, Robbins
Wright

PHARMACOLOGY

- 201 *Pharmacology* (8)
- 256 *Molecular Pharmacology* (2)

Mandel and Staff
F. Hahn

PHYSICS

- 116 *Quantum and Solid State Physics* (3)
- 163 *Optics* (3)

Staff
Staff

* See the School of Engineering and Applied Science Catalogue.

| | |
|---|------------|
| 164 Thermodynamics (3) | Staff |
| 165-66 Electromagnetic Theory (3-3) | Staff |
| 167 Principles of Quantum Physics (3) | Staff |
| 168 Applied Quantum Physics (3) | Staff |
| 170 Elementary Solid State Physics (3) | Staff |
| 172 Biophysics (3) | Jehle |
| 233-34 Quantum Mechanics (3-3) | Staff |
| 241 Statistical Mechanics (3) | Staff |
| 243 Solid State Physics: Structure and Binding (3) | Eisenstein |
| 244 Solid State Physics: Electronic Processes in Metals (3) | Eisenstein |
| 248 Elementary Particles (3) | Jehle |
| 249 Statistical Processes (3) | Zuchelli |

PHYSIOLOGY

| | |
|---|---------|
| 191 Selected Topics in Human Structure and Function (3) | Kenney |
| 201 Physiology (8) | Staff |
| 259 Introduction to Electron Microscopy (3) | Cassidy |
| 271 Electronic Instrumentation (3) | Lavine |

STATISTICS

| | |
|--|------------------|
| 113 Computer Programming (3) | Thomas and Staff |
| 114 Introduction to Computer Operating Systems (3) | Thomas and Staff |
| 115 Programming Languages (3) | Thomas and Staff |
| 117 Analysis of Variance (3) | Staff |
| 118 Regression Analysis (3) | Staff |
| 197 Digital Computer Programming with Applications (3) | Thomas |

Botany

See "Biological Sciences."

Business Administration

Professors J.L. Jessup, J.C. Dockeray, R.B. Fastin, R.F. Ericson, G.L. Lippitt, D.D. Roman, Roy Herrmann (*Visiting*), H.R. Page

Professorial Lecturers C.W. Clewlow, L.C. Collins, C.E. Houston, R.A. Kaye, K.F. McClure, J.P. Murphy, M.H. Schwartz, Tom Kouzes, C.G. Berns, G.C. Jacobus, E.A. Woody, Jerome Bracken, J.F. Doubleday, Thomas O'Connor

Associate Professors J.F. McCarthy, Jr., H.C. Demoody, E.R. Magruder, P.D. Grub (*Chairman*), M.M. Wofsey, G.R. Allen, Guy Black, Rodney Eldridge, E.J. Mock, J.R. Rizzo, J.H. Norton, R.L. Holland, R.F. Hartley

Associate Professorial Lecturers C.M. Campbell, George Idelson, L.B. Pouliot, W.G. Wells, Jr., Clifford Longest, R.N. Hampton, S.F. Divita, J.F. Regan, R.M. Soland, Leonard Ackerman, F.R. Bahr, R.W. Hagauer, Therion Tedder, E.G. Triner, J.G. Birdsong, Neil Murphy, J.C. Susbauer

Assistant Professors L.C. Smith, G.F. Conner, R.A. Barrett, J.R. Roman, Jr., Elizabeth Adams, J.W. Waldrip, W.E. Smith, P.M. Dickie, G.P. Lauter, S.N. Sherman

Assistant Professorial Lecturers G.J. Glassman, J.W. Clark, M.M. Dietch, Jr., Maurice Kogan, J. A. Marlin, W.J. Ryan, C.M. Unkovic, N.R. Harbaugh, R.R. Thelwell, C.R. Russell, L.R. Brown, D.E. Hovey, Norma Loeser, P.M. LoRusso, I.L. Mueller

Instructor J.R. Glennie

Lecturers C.R. Julian, T.M. Ryan, W.G. Locke, W.R. Johnston, R.O. Lundquist

Bachelor of Business Administration with a major in Business Administration of International Business.—See pages 128–35.

Master of Business Administration in the fields of Business Administration, International Business, or Personnel Administration.—See pages 136–40, 142.

Doctor of Business Administration.—See pages 147–49.

BUSINESS ADMINISTRATION

FIRST GROUP

- 51 **Introduction to Business** (3) Page, Conner
The business environment; structure, activities, and problems of business enterprise; its contribution to society; careers in business. (Fall—day and evening; spring—day; summer 1969)

SECOND GROUP

- 102 **Fundamentals of Management** (3) Conner, Russell
Planning, organizing, directing, coordinating, and controlling activities of the administrative unit; evolution of management thinking. (Fall and spring—day and evening; summer 1969)
- 105 **Personnel Management** (3) Barrett, Locke
The labor force and labor markets. Industrial personnel and manpower programs, organizations and policy in personnel activities. (Fall—day; spring—evening; summer 1969)
- 106 **Problems in Personnel Management** (3) Magruder
Principles and problems of personnel management and industrial relations illustrated by cases drawn from industry and government. Prerequisite: Business Administration 105. (Fall—evening; spring—day)
- 107 **Collective Bargaining** (3) L. Smith
Characteristics of American unionism and collective bargaining; economic, social, and public policy considerations. Management's role in the negotiation and administration of collective bargaining agreements. (Fall—evening)
- 109 **Office Management** (3) Lundquist
Organization and management of the office, office and information systems, planning and execution of work, systems analysis, supervision problems. (Spring—evening)

- 113 Real Estate (3)** Doubleday
Principles of urban real estate practice; leasing and property management, valuation, appraisal, financing, taxation, urban growth, urban renewal. (Fall—evening)
- 118 Introduction to Data Processing (3)** Demoody, Waldrup
Basic principles and methods of data processing. Introduction to fundamentals, potentials, and problems of automatic data processing as a tool of management. (Fall and spring—day; summer 1969)
- 119 Data Processing Programming (3)** W. Smith
Basic principles and methods of computer programming. Introduction to computer programming concepts; form and character of instructions and programming schema for leading types of digital electronic computers. Prerequisite: Business Administration 118 or permission of instructor. (Fall and spring—day)
- 120 Data Processing Systems (3)** Demoody, Waldrup
Basic principles and methods of data systems analysis, design, and implementation. Emphasis on relationship between equipment systems and management information systems; development of data processing systems. Prerequisite: Business Administration 118 or permission of instructor. (Fall and spring—day)
- 121 Fundamentals of Insurance (3)** Doubleday, Marlin
Function of insurance in the economic life of business and individuals; risk planning, conservation, management. (Fall—evening)
- 122 Insurance Estate Planning (3)** Campbell
Estate programming, role of insurance in providing protection and estate development, disposition of the individual estate. (Spring—evening)
- 131 Business Finance (3)** Mock
Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1-2. (Fall—day; spring—day and evening; summer 1969)
- 132 International Business Finance (3)** Eldridge
Introduction to principles, practices, problems, and institutions of international finance. Emphasis on international financial markets, exchange rates, balance of payments restraints, and governmental policies. (Fall—day)
- 133 Capital Formation (3)** Eldridge
Survey of the process of capital formation in a free enterprise economy. Focus on the roles of business firms, financial intermediaries, money and capital market institutions, governmental regulatory agencies, and the fiscal and monetary policies of governments. Prerequisite: Accounting 1-2, Business Administration 131. (Spring—day)
- 135 Managerial Finance (3)** Mock
(Replaces former Business Administration 195 Controllership)
Functions and objectives of financial management; problems of internal financial analysis, forecasting, planning, and control; management of corporate capital; problems of capital supply; case studies. Prerequisite: Accounting 193, Business Administration 131. (Spring—day)

- 138 Investment and Portfolio Management (3)** Dockeray, Mueller
Principles of security investments: analysis of specific security investments and security markets, industry studies, portfolio construction and management. Prerequisite: Accounting 1-2, Business Administration 131. (Fall—evening)
- 141 Basic Marketing Management (3)** Hampton
Introduction to marketing and marketing management in relation to our total economy and business management, consumer and demand analysis, retailing, wholesaling, major marketing management problems and policies with particular emphasis on major decision areas and tools. Prerequisite: Economics 1-2. (Fall—evening; spring—day; summer 1969)
- 142 Retail Marketing (3)** Hartley
Retail marketing perspective: problems of location, financing, merchandising policy, advertising and sales promotion, operating policy. Trends in retailing. (Not offered 1969-70)
- 143 Marketing Research (3)** Hartley, Lauter
Principles and practices of marketing research with particular emphasis on basic methods and techniques, sources and interpretation of data, and presentation of results. (Fall—evening)
- 144 International Marketing Management (3)** Lauter, Glennie
Introductory course; analysis of the international marketing position of the United States, channels for international marketing, international advertising media, legal aspects of international marketing, methods of preparing foreign market surveys, development of policies. (Fall—evening)
- 145 Sales Management (3)** Hartley
Organization of sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs. Prerequisite: Business Administration 141. (Spring—evening)
- 147 Advertising (3)** Idelson
Advertising as a function of marketing and merchandising: uses and limitations of advertising as a tool of management; fundamentals involved in getting a finished advertisement before potential customers; evaluation, criticism, and control of advertising. (Spring—day)
- 158 Physical Distribution Management (3)** Julian
Distribution from shipper's point of view: problems of plant location, inventory control, warehousing; traffic management emphasized, including private carriage. (Fall—evening)
- 161 Commercial Law: Contracts, Sales, Agency, Bailments (3)** Collins, McClure, Murphy
(Fall—day and evening; summer 1969)
- 162 Commercial Law: Negotiable Instruments, Property, Mortgages (3)** Collins, McClure, Murphy
(Spring—day and evening; summer 1969)

- 163 **Law in Relation to the Form of Business Units: Corporations, Partnerships, and Trusts (3)** Murphy
(Not offered 1969-70)
- 171 **Principles of Transportation (3)** J. Roman
Impact of intercity transportation systems on society. Emphasis on modal differences in development, economic characteristics, and regulation. (Fall—day)
- 172 **Public Utilities (3)** Glassman
Legal and economic meaning of public utility concept; development, services, economic characteristics, rate making, and regulation of utility industries, with emphasis on electric, gas, and telephone industries. (Spring—evening)
- 173 **Transportation Systems Management (3)** J. Roman
Comparative study, from the standpoint of various carrier modes, of management problems common to all modes of domestic and international transportation. (Spring—day)
- 174 **Urban Transportation (3)** J. Roman
Problems of developing balanced transportation systems for urban areas—area needs, modal evaluation, cost effectiveness, finance, and marketing. (Fall—evening)
- 175 **Introduction to Foreign Trade (3)** Kaye, Waldrip
The physical movement of goods in international business; conditions essential for successful trading; development of a hypothetical export shipment, including examples of documentation required and discussion of procedural problems from a management point of view. Emphasis on ocean marine insurance and export traffic management policy. Prerequisite: Economics 1-2. (Fall and spring—evening)
- 176 **International Business Theory and Policy (3)** Eldridge, Grub
Causal relationships underlying international business transactions, role of government in international trade, international agreements between private producers, trade with developing nations, developing international business policy. (Spring—evening; summer 1969)
- 177 **Foreign Markets (3)** Glennie, Kogan
Patterns of world trade by countries and commodities, selected regional analysis, and in-depth market studies. Prerequisite: Business Administration 144 and 175 or permission of instructor. (Spring—evening)
- 178 **Management of International Business Operations (3)** Dickie, Grub
Analysis of overseas projects according to purpose and type of organization; case studies involving development and management of overseas marketing programs and other operations in different world areas. Prerequisite: Business Administration 175 or permission of instructor. (Spring—evening)
- 181 **Manufacturing Production (3)** D. Roman, Clark
Basic principles and methods of manufacturing production. Manufacturing facilities, plant and equipment. Illustrations selected from various process and fabrication industries. (Spring—evening)

191 Business Reports and Analyses (3)

Mueller, Johnston

Sources of management information, array and analysis of data, interpretation and presentation of findings. (Fall—day and evening; spring—day; summer 1969)

198 Case Problems in Management (3)

Eastin, Page

Principles and techniques of management illustrated by cases drawn from business and industry. Prerequisite: Business Administration 102, 105, 131, 141. (Fall—day; spring—day and evening)

THIRD GROUP**201 Social Environment of Business (3)**

Ericson

American business history stressing social influences. Business problems faced, decisions made, and actions taken by the historical succession of owners and managers. Business responsibility, ethics, and morality. (Fall—evening)

203 Legal Environment of Business (3)

Timbers

Business under the U.S. Constitution, Federal legislation, legal precedents, and agency orders. Major emphasis on Supreme Court decisions relating to business. (Not offered 1969-70)

208 Personnel Management and Industrial Relations (3)

Barrett

Survey of personnel management practices and procedures, including labor-management relations. (Fall—day; spring—evening)

209 Seminar: Personnel Management (3)

Eastin

Discussion of industrial personnel and manpower management, and research in advanced problems. (Fall—evening; summer 1969)

210 The Personnel Manager (3)

Jessup

The personnel manager and his place in the organization, relations of personnel manager to other executives, personnel manager's policy role and relations with chief executive. Key problems of the senior personnel executive. (Spring—evening)

212 Unionism and Collective Bargaining (3)

L. Smith, Barrett

The American labor movement. Collective bargaining and the conduct of labor relations under collective bargaining agreements. (Fall—evening)

213 Current Issues in Unionism, Collective Bargaining, and Labor Relations (3)

L. Smith, Barrett

Current problems and issues. Prerequisite: Business Administration 212 (Spring—evening)

215 European Common Market (3)

Analysis of treaty establishing European Economic Community; institutions of EEC and of member states and the internal law of member states as they affect doing business in EEC; series of problems arising out of establishing and operating business with and within EEC. Background in international law and antitrust law desirable. (Same as Law 541 (2)).* (As arranged)

* Students registering for Business Administration 215, 217, or 218 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.

217 Seminar: International Technical and Economic Assistance (3)

Programs of technical and economic assistance for development overseas conducted by United States, United Nations, Organization of American States. Special attention to work being done in Latin America. Problems of law, policy, program, and administration. Evaluation of alternate operating techniques and results achieved by these programs. Open also to qualified graduate students in the field of economics, international affairs, and political science. (Same as Law 542 (2)).* (As arranged)

218 Legal Aspects of International Business Transactions (3)

U.S. law and practice, including current antitrust and tax problems; brief comparison with British and Civil Law systems; international law, foreign contracts, choice of law; currency considerations; effect of SEC laws and regulations; international trade, including GATT and reciprocal trade arrangements; sources of finance, both United States and foreign, private and public; including international organizations; and selected case studies. In addition to the regular lecturers, there will be guest lecturers in their specialties. Prerequisite: Law 303. (Same as Law 427 (2)).* (As arranged)

225 Seminar: Manufacturing Production (3)

D. Roman

Examination of production technology, including new manufacturing processes, materials, products, equipment, and facilities. Implications of emerging technology in managing the production function. Cases, lectures, and individual student research. Prerequisite: Business Administration 181 or permission of instructor. (Spring—evening)

229 Seminar: Administration of Research and Development (3)

D. Roman

Examination of technological, political, and economic factors affecting the R&D environment; operational aspects; management problems in military, governmental, and industrial organizations; project selection, resource allocation, personnel, planning and control, measurement and evaluation. (Fall—day)

231 Financial Decision Making (3)

Dockeray, Mock

(Formerly *Corporate Financial Problems*)

Functions and objectives of financial management, asset management, problems of internal financial analysis, rate-of-return analysis, financial forecasting, problems of capital demand and supply. (Fall—evening; summer 1969)

232 Seminar: Capital Resource Management (3)

Dockeray, Mock

(Formerly *Seminar: Business Finance*)

Problems of capital acquisition, costs, rationing, structure; dividend policy. Prerequisite: Business Administration 231. (Spring—evening)

233 Seminar: International Business Finance (3)

Eldridge

Case development and analysis of problems in international business finance. Impact of the evolving international payments system on business. (Spring—evening)

* Students registering for Business Administration 215, 217, or 218 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour

- 234 **Seminar: Capital Formation (3)** Eldridge
Determinants of saving and investment, timing of corporate security issues, analysis of current capital market conditions. (Fall—evening)
- 235 **Financial Management (3)** Mock
Problems of financial management encountered in the organization and operation of a corporation; planning financial structure, obtaining and managing capital, issuing and placing securities, administering income, security arrangements. Primarily taught by the case method. Prerequisite: Accounting 215, Business and Public Administration 201. (Spring—as arranged)
- 237 **Investment Analysis (3)** Dockeray, Hagauer
Analysis of specific security investments; common and preferred stocks; corporate, government, and revenue bonds; sources of information. (Fall—evening; summer 1969)
- 238 **Seminar: Investment and Portfolio Management (3)** Dockeray, Hagauer
(Formerly Seminar: Investments)
Research and analysis of investment problems, techniques of selection and management of various types of funds. Prerequisite: Business Administration 237. (Spring—evening)
- 241 **Advanced Marketing Management (3)** Lauter, Divita
Marketing management problems and policies in major decision areas of product planning, channels of distribution, advertising, personal selling, sales promotion, pricing, and development of integrated marketing programs. Tools useful in decision making. Case analysis. (Fall and spring—evening; summer 1969)
- 242 **Seminar: Marketing Theory (3)** Hartley
Critical review of the development of marketing thought and important marketing literature. Special and current problems and/or trends in marketing and their impact on the firm and society. Prerequisite: Business Administration 241. (Spring—evening)
- 243 **Seminar: Marketing Research (3)** Hartley
Research as an aid to decision making and increased efficiency in marketing, marketing research process, critical appraisal of methods and results, applications of marketing research. Cases, selected readings, and research projects. Prerequisite: a course in basic statistics. (Spring—evening)
- 246 **Consumer Behavior (3)** Hartley
Consumer decision making in the market place; research in pertinent interdisciplinary studies in psychology, sociology, and other behavioral fields; present and potential applications for marketing. (Fall—evening)
- 247 **Advertising Management (3)** Idelson
Case studies and text material dealing with executive determination of advertising organization, basic strategy relative to marketing program, promotional program, advertising appropriation, preparation and scheduling of advertisements, media selection, and determination of effectiveness. Advertising research and economic and social aspects. (Fall—evening)

- 248 International Marketing (3)** Lauter
 Organization for international marketing, foreign demand analysis, product development and policies, marketing structure and trade channels, advertising and promotion problems and policies, pricing, credits and collections, and legal aspects. Particular emphasis on development of effective international marketing strategy. (Fall and spring—evening)
- 249 Seminar: Comparative Marketing (3)** Lauter
 Theoretical foundation for advanced work in international business. Evaluation of domestic marketing systems of different countries with particular attention to the manner in which economic and social forces create similarities and differences in performance of the marketing function. Marketing in Western Europe, Latin America, the socialist bloc, and selected underdeveloped areas of Africa and Asia. (Spring—evening)
- 253 Distribution Logistics (3)**
 Application of the systems concept to problems of physical distribution and supply of goods. Role of logistics in the economy and the business firm, transportation rates and services, location theory and problems, customer service standards pricing, inventory control, information flow, scheduling, allocation, warehousing, traffic, and logistics system organization. (Spring—evening)
- 255 Seminar: International Trade I (3)** Grub, Eldridge
 Research, analysis, and discussion of public and private foreign trade institutions; principles and theories of international trade; role of foreign trade and investment on U.S. balance of payments; problems and changing patterns in U.S. trade in the Western Hemisphere. (Fall—day and evening)
- 256 Seminar: International Trade II (3)** Grub, Eldridge
 Research, analysis, and discussion of international problems arising from economic integration; emphasis on European Economic Community; U.S. trade with developing nations; East-West trade problems and potential; foreign trade policy of the United States. (Spring—evening)
- 257 Operation of the Multinational Firm (3)** Dickie, Grub
(Formerly The Manager in the World Economy)
 Analysis and discussion of problems in international business by use of the case method, including international market entry and expansion; operating policies, procedures, and problems of multinational companies, developing executives for international business. (Spring—evening; summer 1969)
- 258 Colloquium on International Business (3)** Grub
 Primarily for doctoral students. Research on selected problems in international business with emphasis upon national and international policies regarding regionalism, trade barriers, investment incentives, international organization, foreign aid and development assistance and its relation to trade with developing nations, and trade with the Communist Bloc. (Fall—evening)
- 259 Colloquium on Comparative Business Management (3)** Lauter, Grub
 Primarily for doctoral students; open to Master's candidates with permission of instructor. Comparative analysis of business practices and man-

agement systems in different countries and under different economic systems. Special attention to generic characteristics of management and of business enterprises and how these are modified in different environments. Examination of the influence of these factors on the level of economic development, social structure, history, and culture of a country. Emphasis on seminar reports and term papers. Prerequisite: Business and Public Administration 201 or equivalent. (Spring—evening)

261 Managerial Economics I (3)

Black, Holland

Managerial applications of economic analysis. Applications of economic theory and statistics to business decisions involving demand, production, cost, profits, investments, and inventories. Prerequisite: Business and Public Administration 203, Economics 217, Statistics 111 and 112; or equivalent; or consent of instructor. (Fall and spring—evening)

262 Managerial Economics II (3)

Black, Holland

Managerial applications of economic analysis. Use of economic theory and statistics in business forecasting; interpretation of economic trends and developments; analysis of governmental economic policies as they affect business. Prerequisite: Business and Public Administration 203, Economics 218, Statistics 111 and 112; or equivalent; or consent of instructor. (Fall and spring—evening)

265 Seminar: Managerial Economics (3)

Black

Primarily for doctoral students. Special topics and applications of analytical tools to business decision making and policy, drawn principally from current literature. Preparation and presentation of seminar papers by students on approved topics. Prerequisite: Business Administration 261, 262; or consent of instructor. (Spring—evening)

275 Seminar: Transportation (3)

J. Roman
(Spring—evening)

Problems and special areas of interest in transportation. (evening)

280 Procurement and Contracting (3)

Ryan

Survey and overview of procurement and contracting practices and procedures in government and industry. (Fall—evening)

281 Purchasing Principles and Practices (3)

Industrial purchasing practices and principles. Organization and functions of the purchasing department. Types of purchase agreements, source selection, competition and negotiation, policies and ethics. (Fall—day; summer 1969)

282 Government Contract Administration (3)

Surveillance over performance of contract. Rights and obligations, changes, suspension of work, default, termination for the convenience of the government, inspection, warranties, procedures for the settlement of controversies on government contracts. (Spring—day)

283 Pricing and Negotiation (3)

Collecting and evaluating data for pricing purposes. Negotiating profit. Weighted guidelines and other attempts at formalizing the profit computation. Negotiation procedures and techniques. (Fall—day)

284 Procurement Data Management (3)

Technical data and the procurement process, contract work statements, performance specifications, detailed design drawings, "or equal" purchase descriptions and other types of work statement. The impact of government policies on work statement preparation. Control of contract performance by configuration control and base line management systems. Proprietary data. (Summer 1969)

285 Systems Procurement and Project Management (3) D. Roman, Page

Development and procurement of major systems. Project management and the impact of this technique on the procurement process. Procurement planning—from concept formulation through contract definition, development, and manufacture. (Spring—day)

286 Government Contracts (2)

Survey of basic law underlying government procurement, basic power and limitations on Federal Government in entering into contracts, administrative and legislative policies governing these contracts, advertised and negotiated procurement procedures, forms of contracts and clauses used. (Same as Law 355) (As arranged)

287 Government Procurement Law (2)

Survey of the law pertaining to government procurement including an analysis of the unique features of government contracting and a discussion of the functions of Congress, the Executive branch, and the Courts in the procurement process. (Same as Law 431) (As arranged)

288 Formation of Government Contracts (2)

Detailed coverage of the rules and practices followed in arriving at contracts between the Government and private parties. Comparison in depth of advertised and negotiated procurement and analysis of the techniques used in pricing and arriving at the terms of such contracts. (Same as Law 432) (As arranged)

289 Performance of Government Contracts (2)

Discussion of the substantive legal problems that most frequently arise during the performance of government contracts. Interpretation of specifications and the most generally used contract clauses, and analysis of the rights of the parties when performance in accordance with the terms of the contract is not obtained. (Same as Law 433) (As arranged)

290 Government Contract Claims and Litigation (2)

Analysis of the methods which can be used by the parties to a government contract to obtain legal relief, including detailed coverage of the disputes procedure, actions for breach of contract, and forms of equitable and extraordinary relief. (Same as Law 434) (As arranged)

291 Seminar: Business Management (3)

Eastin

Research on various phases of management as practiced in American industry. (Fall and spring—evening)

293 Business Research (3)

May be repeated once for credit. (Fall or spring—as arranged)

295 Business Decision Simulation (3)

Allen, Dickie

Managerial decision making in a diversified multinational firm. Students are organized into teams in a simulated competitive environment in which a complex situation is played out using computers. Prerequisite: advanced Master's or doctoral standing. (Fall—evening)

297 Case Studies in Business Administration (3)

Jessup, Page

Cases covering the whole range of business activity. Analysis of operational situations and policy issues. Developing and implementing solutions to managerial problems. (Fall and spring—day and evening)

298 Readings in Business (3)

Conner, Kaye

Supervised readings in selected fields within business administration. Admission by permission of instructor. May be repeated once for credit. (Fall and spring—evening; summer 1969)

299 Thesis Seminar (3)

Hartley

Examination of thesis standards, research philosophy and methodology. (Fall and spring—evening; summer 1969)

300 Thesis Research (3)

Staff

(Fall and spring—as arranged; summer 1969)

FOURTH GROUP**398 Advanced Reading and Research (arr.)**

Staff

Limited to students preparing for the Doctor of Business Administration general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

399 Dissertation Research (arr.)

Staff

Limited to Doctor of Business Administration candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

BUSINESS AND PUBLIC ADMINISTRATION**THIRD GROUP****201 Advanced Administrative Management (3)**

Eastin, Brown

Advanced course in administration emphasizing principles and practices common to administrative units of all kinds. (Fall and spring—day and evening; summer 1969)

203 Mathematics for Management (3)

Norton, Herrmann, Holland, Paik

Mathematical concepts employed in the solution of management problems. Applications of analytical geometry, functions, elements of calculus, and linear algebra to optimization problems. Prerequisite: algebra. (Fall—day and evening; spring—evening; summer 1969)

204 Quantitative Factors in Administration (3)

Norton, Herrmann, Holland, Paik

Survey of quantitative techniques used in the solution of management problems. Potentials and limitations of mathematical models and proper areas for their application. Topics include probability, statistical decision theory, linear programming, waiting line, inventory replacement models.

Prerequisite: Business and Public Administration 203 or equivalent.
(Fall and spring—day and evening; summer 1969)

207 Human Behavior in Organizations (3) Lippitt, Rizzo

Individual, group, intergroup, and other human behavior and development; application of social science research to administration. Practical applications emphasized. (Fall and spring—day and evening; summer 1969)

208 Current Issues in Organizational Behavior (3) Lippitt, Rizzo

Study of behavioral factors relating to issues such as automation, ethics, labor-management relations, and similar problems. Problems in behavioral science research. Prerequisite: Business and Public Administration 207. (Fall—day; spring—evening)

209 Colloquium on Behavioral Sciences (3) Lippitt

Primarily for doctoral students. Supervised study in depth and field projects in the behavioral sciences. Prerequisite: Business and Public Administration 207 or permission of instructor. (Fall—day)

210 Behavioral Factors in the Process of Change (3) Lippitt

Current research and theory related to the process of change. Basic principles of planned change; individual, group, organization, community, and cultural change. Human behavior research related to the change process emphasized. Prerequisite: Business and Public Administration 207 and 208. (Spring—evening)

211 Leadership and Executive Performance (3) Grub, Rizzo, Loeser

Theories of managerial leadership; issues and problems associated with leadership in large organizations and at higher management levels; executive selection and development. Prerequisite: Business and Public Administration 201 or permission of instructor. (Spring—evening; summer 1969)

218 Survey of Data Processing (3) McCarthy, Wofsey, Demoody, Adams

Fundamentals of automatic data processing; manual, punched card, and electronic data processing principles and procedures; basic machine language and advanced language programming techniques; phases of data systems development; role of the manager in management information systems. Emphasis on proper use of data processing as another tool of management. (Fall and spring—day and evening; summer 1969)

219 Digital Computer Programming Concepts (3) Allen, W. Smith

Programming concepts, techniques, and practices; FORTRAN and COBOL; address modifications, indexing, sub-routines, sub-programs, table look-up, machine functions, data representation, instruction formatting, and programming systems; government- and business-oriented problems. Student programs are run on the University 360 computer. Students will not become programmers, but will understand the use of programming in management information systems. Prerequisite: Business and Public Administration 218 or permission of instructor. (Fall and spring—evening)

220 Comparative Digital Computer Systems and Their Management (3) Wofsey, Schwartz

Characteristics and capacities of the range of data processing equipment in use today, special purpose equipment in business and government,

recent and prospective equipment developments. Fundamentals of data processing installation design and management. Prerequisite: Business and Public Administration 218 or 219, or permission of instructor. (Fall and spring—evening)

221 Management Information Systems Development and Application (3) McCarthy

Development of management information systems, integration of data processing in operations of government or business, impact on management organization and decision making. Case studies. Prerequisite: Business and Public Administration 218 or 219, 224; or permission of instructor. (Fall—evening; spring—day and evening; summer 1969)

222 Seminar: Advanced Digital Computer Concepts (3) Wofsey, Allen

Advanced problems in the design and application of computer systems. Admission by permission of instructor. (Fall and spring—evening, summer 1969)

223 Management of a Data Processing Organization (3) Adams

Organization and management of data processing function in business and government; study of types of resources required: planning, scheduling, and production of data processing workloads; performance standards and evaluation criteria. Prerequisite: Business and Public Administration 218 and either 219 or 220; or permission of instructor. (Fall and spring—evening)

224 Theory and Management of Systems (3) Wofsey, Dickie

Advanced course in systems, emphasizing systems theory and the capacities, capabilities, and management of current, large systems. Analysis of components and elements of systems and their association with management concepts. Applications; various techniques and potential problems for implementation. Systems of the future are projected with consideration of quantitative and technological developments. Particular emphasis on computer-based and communications-oriented systems. Prerequisite: Business and Public Administration 201, 218. (Not offered 1969-70)

225 Introduction to Managerial Statistics (3) Norton

(Business and Public Administration 225 and 226 replace former 225-26 Statistics and Probability as Applied to Management Problems)

Introduction to the mathematics of probability and statistics and its applications in management science and operations research. Topics include random variables; discrete and continuous probability distributions; moments and other descriptive measures; sampling theory; and an introduction to statistical estimation, hypothesis testing, and regression analysis. Prerequisite: Business and Public Administration 203 or equivalent. (Fall—evening)

226 Managerial Statistics (3) Norton

(Business and Public Administration 225 and 226 replace former 225-26 Statistics and Probability as Applied to Management Problems)

Management applications of the theory and techniques of mathematical statistics. Topics include maximum likelihood and other methods of estimation, hypothesis testing, descriptive measures of bivariate distributions, regression and correlation, analysis of time series, econometric models and multiple regression, statistical decision theory, and the revision of probabilities in decision making. Prerequisite: Business and Public Administration 225. (Spring—evening)

- 227 Mathematical Programming: Techniques and Applications (3)** Bracken
 Technical and management considerations of linear and nonlinear programming. Mathematical and computational aspects of linear programming. Formulation of linear programming models. Studies of applications of linear programming. Introduction to theory and application of nonlinear programming. Prerequisite: Business and Public Administration 203 or equivalent. (Fall—evening)
- 228 Systems Analysis by Simulation (3)** Bracken, Holland
 Methods of systems analysis via computer simulation. Particular attention to inventory models, although queueing systems and management planning models are also covered. Prerequisite: Business and Public Administration 225, 226. (Not offered 1969-70)
- 229 Seminar: Management Science and Operations Research (3)** Bracken, Herrmann, Dickie
 Supervised study in depth and advanced projects in management science and operations research. Prerequisite: Business and Public Administration 225, 226, 227; or permission of instructor. (Spring—evening)
- 262 Seminar: Contemporary Administrative Theory (3)** Ericson
 Primarily for doctoral students. An overview of current and prospective theory and practice from an inter- and trans-disciplinary viewpoint. Topics addressed include: general systems theory, game theory, axiology and management values, antithetics, value engineering, cybernetic systems, decision theory, innovation and creativity models, and general semantics. (Fall—day; spring—evening)
- 263 Organization and Management (3)** Ericson
 Contemporary management theory; emphasis on application of management concepts in organizational practice. Comparative studies of current organizational designs and management processes. Prerequisite: Business and Public Administration 201, 204, 207. (Not offered 1969-70)
- 268 Management Engineering (3)** Clewlow
 Analysis of the techniques for initiation and implementation of management engineering programs; emphasis on organization and methods surveys, including the study of work measurement, work simplification, management audits, and other management improvement programs. Not open to students who have taken former Business and Public Administration 269. (Fall and spring—evening)
- 287 Relations of Government to Business (3)** Timbers
 Activities of government in relation to business management in areas of labor relations, wages, production, and prices. Trend and change in economic activity and its bearing upon government policy. (Spring—day)
- 290 Conferences: Government and Business Administration (arr.)**
 Lecture and conference series; distinguished visiting professors, speakers from government and business. (Spring—as arranged)
- 295 Research Methods (3)**
 Research techniques, sources of information, array and analysis of data, interpretation and presentation of the findings. (Spring—as arranged)

Chemistry

Professors B.D. Van Evera, S.N. Wrenn, C.R. Naeser (*Chairman*), R.C. Vincent, R.E. Wood, T.P. Perros, W.E. Schmidt, D.G. White, J.B. Levy
Associate Professors Nicolae Filipescu, Bette Barton, F.L. Minn, A.D. Britt, E.A. Caress

Associate Professorial Lecturer Abraham Schwebel

Assistant Professor D.A. Rowley

Lecturers F.C. Edmundson, C.R. Midkiff, Jr., Senta Rogers

Bachelor of Arts or Bachelor of Science with a major in Chemistry (Departmental).—The Department offers two undergraduate majors designed to give students broad training in the basic divisions of chemistry: analytical, inorganic, organic, and physical chemistry. *Major I* provides considerable concentration in chemistry. However, it permits a wider selection of electives, and thus should meet the needs of students preparing to enter medicine, dentistry, or related fields. *Major II* is intended primarily for students preparing for graduate study in chemistry or those planning to enter the chemical profession and wishing to be certified to the American Chemical Society as having met the minimum requirements for professional training. Two foreign languages are recommended for students planning to do graduate work in chemistry.

Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 76, including Chemistry 11–12 and 22 or 15–16, 51–52, 53–54; Mathematics 22 or 31; Physics 1, 2 or 30, 51–52.

Major I—required: the general requirements, pages 81–85, including Chemistry 111, 112, 113–14, 122, and 134.

Major II—required: the general requirements, pages 81–85, including the German language, all requirements of Major I, except Chemistry 134, plus Chemistry 135, 154 or 155, 235; Mathematics 23 or 32; an advanced laboratory course selected from Chemistry 155, 221, 156, 195, or one semester hour of Chemistry 135; and one course selected from Chemistry 195, 207, 213, 221 (if not elected previously), 222, 251, Mathematics 111, 139, Physics 161, 162, 165–66, 167, 168, 175. The student is encouraged to take Mathematics 24 or 33 and Physics 31–32 in preparation for advanced courses and graduate work. These courses are essential to graduate work in theoretical chemistry.

Master of Science in the field of Chemistry.—*Prerequisite:* a Bachelor's degree with a major in Chemistry from this University, or equivalent.

Required: the general requirements, pages 89–95. The required thirty semester hours of graduate work must include Chemistry 213 and 221, and at least two of the following: Chemistry 207, 236, and 251. In addition to the above, Chemistry 193, 299–300, and at least four semester hours of advanced laboratory work are also required. Courses which may be taken to satisfy this laboratory requirement are Chemistry 221 and 222 (three semester hours), 135, 136, 155, and 156; a maximum of two semester hours of Chemistry 295 may also be applied to the laboratory requirement. Chemistry 156 is prerequisite to Master's thesis work in the field of organic chemistry. All graduate students are required to participate in the seminar program (Chemistry 291) and colloquium program. A reading knowledge examination in French, German, or Russian (German or Russian preferred) must be passed before the second half of the work is started. A student who intends to become a doctoral candidate is strongly urged to take Chemistry 207 as early as possible in his graduate program.

Master of Science in the field of Geochemistry (an interdepartmental degree offered by the departments of Chemistry and Geology).—*Prerequisite:* a Bachelor's degree with a major in Chemistry or in Geology from this University, or equivalent

Required: the general requirements, pages 89-95, including Chemistry 111, 112; Geology 141, 241, 249; and Chemistry 213 or Geology 245. The Master's Comprehensive Examination must be taken before registration for the second half of the thesis work. A reading knowledge examination in a foreign language, approved by the Department of Chemistry or Geology, must be passed before the second half of the work is started.

Doctor of Philosophy fields of study in Chemistry: Analytical Chemistry, Chemistry of Natural Products, Inorganic Chemistry, Organic Chemistry, Physical Chemistry (Electrochemistry, Kinetics, Magnetic Resonance, Solubilities, Theoretical), and Physical Organic Chemistry (Reaction Mechanisms).—See pages 89-93, 95-97, for requirements for the degree. Cumulative examinations replace the "General Examination" requirement.

Doctor of Philosophy field of study in Geochemistry (an interdepartmental field offered by the departments of Chemistry and Geology).—See pages 89-93, 95-97, for requirements for the degree.

Bachelor of Arts in Education with a teaching field in Chemistry.—Prerequisite: the Education curriculum, page 78.

Required: the Chemistry option and professional courses on pages 105, 114.

Graduate Placement Examinations: All entering students in the Master's and doctoral programs in the field of Chemistry are required to take the American Chemical Society Graduate Level Placement Examinations, given by the Department of Chemistry, prior to registration in the Graduate School of Arts and Sciences. The four placement examinations (in the disciplines of analytical, organic, inorganic, and physical chemistry) are of the multiple-choice type. These tests are designed to cover the subject matter in the disciplines generally taught in modern undergraduate programs preparatory for graduate work in chemistry, and the results are used by the Department to advise the individual student in planning a program of courses which are appropriate to his background.

Registration: Before completing registration each student must obtain from the representative of the Department an assignment to lecture, recitation, and laboratory sections. The work of the junior and senior years must be approved by the Department.

FIRST GROUP

3-4 Fundamentals of Physical Science (4-4)

Van Evera, Barton

A year course: credit toward a degree at this University given on completion of Chemistry 4. Lecture (3 hours), laboratory (3 hours). Selected topics from chemistry, physics, astronomy, and geology are integrated to introduce the nonscience major to the basic methods and achievements of physical science. Laboratory fee, \$11 a semester. (Academic year—day)

11-12 General Chemistry (4-4)

Staff

A year course: credit toward a degree at this University given on completion of Chemistry 12. Lecture (3 hours), laboratory (3 hours), recitation (1 hour). Elementary course in general chemistry, including qualitative analysis. Prerequisite: one year of high school algebra. Laboratory fee, \$18 a semester. (Offered every year: academic year—day; 1970-71 and alternate years: academic year—evening; summer 1969)

15-16 Intensive General and Analytical Chemistry (Honors Course) (4-4)

Minn

First half: lecture (3 hours), laboratory (3 hours), recitation (1 hour).
Second half: lecture (2 hours), laboratory (6 hours), recitation (1 hour).

Equivalent to Chemistry 11-12 and 22, but with selected topics studied in depth. Prerequisite to Chemistry 15: high school physics and chemistry. Prerequisite to Chemistry 16: Chemistry 15. Admission by placement test prior to registration or on basis of College Board Advanced Placement Examination. Laboratory fee, \$13 a semester. (Academic year—day)

22 Introductory Quantitative Analysis (4) Vincent
Lecture (2 hours), laboratory (6 hours). Theory and practice of quantitative analysis by classical volumetric and gravimetric methods and introduction to instrumental analysis. Prerequisite: Chemistry 12. Laboratory fee, \$18. (Offered every year: fall and spring—day; 1969-70 and alternate years: spring—evening; summer 1969)

50 Introduction to Organic Chemistry (4) Cares
Lecture (3 hours), laboratory (3 hours). A terminal course for students in related disciplines. This course does not fulfill the organic chemistry requirement for chemistry majors or premedical students. Prerequisite: Chemistry 12 or 16. Laboratory fee, \$12. (Fall—day)

51-52 Organic Chemistry (3-3) Levy, Cares
A year course: credit toward a degree at this University given on completion of Chemistry 52. Chemistry of the compounds of carbon. Prerequisite: Chemistry 12 or 16. (Academic year—day and evening; summer 1969)

53-54 Organic Chemistry Laboratory (1-1) Staff
Laboratory complement of Chemistry 51-52. Prerequisite or concurrent registration: Chemistry 51-52. Prerequisite to Chemistry 54: Chemistry 53. Laboratory fee, \$12 a semester. (Academic year—day and evening; summer 1969)

SECOND GROUP

111-12 Physical Chemistry (3-3) Wood
Gas Laws, chemical thermodynamics, solution chemistry, chemical equilibrium, kinetics, chemical statistics, electrochemistry, and other topics. Prerequisite to Chemistry 111: Chemistry 16 or 22; Mathematics 22 or 31. Physics 2 or 30. Prerequisite to Chemistry 112: Chemistry 111. (Offered every year; academic year—day; 1969-70 and alternate years academic year—evening)

113-14 Physicochemical Measurements (2-2) Schmidt, Rowley
Laboratory complement to Chemistry 111-12 and 122. Prerequisite or concurrent registration for Chemistry 113: Chemistry 111. Prerequisite or concurrent registration for Chemistry 114: Chemistry 112, 113, and 122. Laboratory fee, \$18 a semester. (Academic year—day)

122 Instrumental Analysis Lectures (2) Schmidt
Theory of instrumental methods in qualitative and quantitative analysis, determination of structure, and study of reaction mechanisms with emphasis on electroanalysis, spectrophotometry, and chromatography. Correlated with Chemistry 114. Prerequisite or concurrent registration: Chemistry 112. (Offered every year: spring—day; 1969-70 and alternate years: spring—evening)

134 Descriptive Inorganic Chemistry (3)

Rowley

Intermediate level lecture and laboratory course emphasizing the descriptive chemistry of the elements. Prerequisite: Chemistry 16 or 22, 52. Prerequisite or concurrent registration: Chemistry 111. Laboratory fee, \$12. (Fall—day)

135-36 Inorganic Chemistry: Preparations (1 or 2-2)

Perros

Application of the technique of inorganic chemistry to the preparation and purification of a list of selected substances. Prerequisite: Chemistry 52. Prerequisite or concurrent registration: Chemistry 134 or 235. Laboratory fee, \$18 a semester. (First half: fall—evening; spring—day. Second half: fall—evening.)

154 Special Laboratory in Organic Chemistry (1)

Wrenn

Designed to give the chemistry major additional and broader training in the technique of organic chemistry than is obtained in Chemistry 53-54. Prerequisite or concurrent registration: Chemistry 54. Laboratory fee, \$12. (Chemistry 155 may be substituted for this course.) (Spring—day and evening)

155 Organic Chemistry: Preparations (2 or 3)

Wrenn

Synthesis of organic compounds and application of the technique of organic chemistry to the preparation of pure compounds, using larger amounts and greater refinements than in Chemistry 53-54. Prerequisite: Chemistry 16 or 22, 54. Laboratory fee, \$10.50 a semester hour. (Spring—evening)

156 Qualitative Organic Analysis (3)

Wrenn

Lecture (1 hour), laboratory (6 hours). Identification of pure organic compounds, separation of mixtures, and identification of their components. Required of all students planning thesis work in organic chemistry. Prerequisite: Chemistry 16 or 22, 54. Laboratory fee, \$18. (Fall—evening)

191 History of Chemistry (2)

Perros

Historical development of chemistry. Prerequisite: Chemistry 16 or 22, 52. (1969-70 and alternate years: fall—evening)

193 Chemical Literature (1)

Wrenn

A general course: reference work and reports. Prerequisite: Chemistry 16 or 22, 52. Prerequisite or concurrent registration: Chemistry 111. (Fall—evening)

195 Undergraduate Research (arr.)

Staff

Research on problems approved by the Staff. May be repeated once for credit. Laboratory fee, \$7.50 a semester hour. (Fall and spring—as arranged)

THIRD GROUP**203 Chemical Kinetics (2)**

Levy

Rates of chemical reactions and factors influencing them. Prerequisite: Chemistry 52, 112. (1969-70 and alternate years: spring—evening)

207 Chemical Bonding (3)

Barton

Application of quantum mechanics to modern chemical problems, emphasis on molecular orbital and valence bond approximations; group theory. Prerequisite: Chemistry 112. (Fall—day)

211-12 Physical Chemistry (2-1)

Wood

Same as Chemistry 111-12. Admission only by departmental permission. Credit assigned upon satisfactory completion of Chemistry 213. (Offered every year: academic year—day; 1969-70 and alternate years: academic year—evening)

213 Chemical Thermodynamics (3)

Wood

Application of thermodynamics to chemical problems. Thermochemistry, homogeneous and heterogeneous equilibria, statistical calculation of thermodynamic properties, electrochemistry. Prerequisite: Chemistry 112 or 212. (Fall—evening)

214 Principles of Magnetic Resonance (3)

Barton

Application of magnetic resonance to chemical problems, emphasis on the close connection between theory and experiment. Reaction rates, bonding, electron densities, etc. Prerequisite: Chemistry 207 or permission of instructor. (1970-71 and alternate years)

215 Quantum Chemistry (3)

Minn

Postulates of quantum mechanics, exactly solvable systems, variation and perturbation approximations, atomic and molecular structure and spectra, the chemical bond. Prerequisite: Chemistry 207 or permission of instructor. (1969-70 and alternate years: fall—evening)

216 Statistical Mechanics as Applied to Chemistry (3)

Barton

Introduction to classical and quantum statistics designed to acquaint the student with basic principles and application of method. Prerequisite or concurrent registration: Chemistry 207 or permission of instructor. (1969-70 and alternate years: spring—evening)

219 Spectrochemistry (3)

Filipescu

Energetic states of molecules under the influence of electromagnetic radiation and their relation to structures and spectroscopic properties. Prerequisite: Chemistry 207 and 221, or permission of instructor. (1969-70 and alternate years: spring—evening)

221 Advanced Analytical Chemistry I (3)

Britt

Lecture (2 hours), laboratory (3 hours). Theory and application of recent spectrometric methods of analysis, including electrical, magnetic, and optical instrumentation. Prerequisite: Chemistry 122. (Spring—evening)

222 Advanced Analytical Chemistry II (2 or 3)

Schmidt

Lecture (2 hours), laboratory (3 hours—optional). Theory and application of electroanalysis and separations by physicochemical methods. Prerequisite: Chemistry 122. Laboratory fee, \$7.50. (1969-70 and alternate years: fall—evening)

231 Coordination Chemistry (2)

Perros

Selected topics including application of ligand field theory and molecular orbital theory to transition metal complexes, determination of stability

constants, and methods for the synthesis of representative coordination compounds. Prerequisite: Chemistry 236. (1970-71 and alternate years)

232 The Lanthanide and Actinide Elements (2) Perros

Comprehensive review of the physical and chemical properties of the lanthanide and actinide elements; particular emphasis on the more recent developments. Prerequisite: Chemistry 236. (1970-71 and alternate years)

233 Organometallic Chemistry (3) White

Survey of organometallic compounds, emphasis on the organo derivatives of boron, aluminum, and silicon: "sandwich" compounds and the olefin and acetylene complexes of transition metals. Prerequisite: Chemistry 236 and 251, or permission of instructor. (1970-71 and alternate years)

234 Radiochemistry (2) Schwebel

Preparation, properties, and uses of radioactive isotopes, both natural and artificial. Prerequisite: Chemistry 235. (1970-71 and alternate years)

235-36 Advanced Inorganic Chemistry (3-3) White

Application of modern chemical theories to inorganic substances and reactions followed by a detailed study, developed from the periodic table, of the chemistry of the more common elements. Prerequisite to Chemistry 235: Chemistry 52, 114. Prerequisite to Chemistry 236: Chemistry 235. (Academic year—day)

237 Physical Inorganic Chemistry (2) Rowley

Quantitative application of modern theories for interpretation and explanation of the electronic properties of transition-metal complexes. Prerequisite: Chemistry 112 and 134, or Chemistry 235. (1969-70 and alternate years: spring—evening)

251-52 Advanced Organic Chemistry (3-3) Filipescu

Synthesis, reactions, and properties of organic compounds; fundamental theories of organic chemistry, emphasis on reaction mechanisms. Prerequisite to Chemistry 251: Chemistry 52, 112. Prerequisite to Chemistry 252: Chemistry 251. (Academic year—evening)

253 Advanced Synthetic Organic Chemistry (3) Wrenn

Study of reactions employed in the synthesis of organic compounds. Prerequisite: Chemistry 251. (Spring—evening)

257 Physical Organic Chemistry (2) Levy

Physical aspects of the reactions of organic compounds; effects of structure and medium on reactivity. Prerequisite: Chemistry 252 or permission of instructor. (1970-71 and alternate years)

258 Natural Products (2) Caress

Methods of structure determination and synthesis of naturally occurring compounds; some aspects of the chemistry of terpenes, steroids, alkaloids, etc. Prerequisite: Chemistry 251 or consent of instructor. (1970-71 and alternate years)

259 Polymer Chemistry (3) Filipescu

Preparation, properties, and structure of macromolecules. Prerequisite: Chemistry 52, 112. (1969-70 and alternate years: fall—evening)

236 COURSES OF INSTRUCTION

- 291 **Seminar: Recent Developments in Chemistry** (0) Staff
All graduate students are required to participate in this seminar throughout their period of residence in the Department. No academic credit. No tuition fee required. (Fall and spring—day)
- 293-94 **Seminar: Transition-Metal Chemistry** (0) Krauss
A series of seminars and lectures conducted by Professor Hans-Ludwig Krauss of the Institute for Inorganic Chemistry at the Technische Hochschule of Munich, Germany, who will be a National Science Foundation sponsored Visiting Professor. Admission by permission of Department Chairman. (Academic year—evening)
- 295 **Research** (arr.) Staff
Research on problems approved by the Staff. Open to qualified students with advanced training. May be repeated for credit not to exceed a total of 8 semester hours. Laboratory fee, \$7.50 a semester hour. (Fall and spring—as arranged; summer 1969)
- 299-300 **Thesis Research** (3-3) Staff
Laboratory fee, \$18 a semester. (Academic year—as arranged; summer 1969)

FOURTH GROUP

- 398 **Advanced Reading and Research** (arr.) Staff
Limited to students preparing for the Doctor of Philosophy cumulative examinations. May be repeated for credit. (Fall and spring—as arranged; summer 1969)
- 399 **Dissertation Research** (arr.) Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit (Fall and spring—as arranged; summer 1969)

Chinese Language and Literature*

Associate Professor Chung-wen Shih
Assistant Professors G.C.Y. Wang, D.L. Lee
Assistant Professorial Lecturer Ming-jean Loh

Bachelor of Arts in the field of Chinese Studies.—See Public and International Affairs, pages 362-63.
Master of Arts in the field of Linguistics.—See pages 303-5.

FIRST GROUP

- 1-2 **Beginning Mandarin Chinese, Level I** (3-3) Lee
A year course: credit toward a degree at this University given on completion of Chinese 2. Classroom (3 hours), tutorial (1 hour), laboratory (1 hour). Fundamentals of grammar and pronunciation with graded reading and practice in writing. Listening comprehension and oral practice in language laboratory. Laboratory fee, \$17.50 a semester. (Academic year—evening)

* Administered by the School of Public and International Affairs

3-4 Beginning Mandarin Chinese, Level II (3-3)

Wang

A year course: credit toward a degree at this University given on completion of Chinese 4. Classroom (3 hours), tutorial (1 hour), laboratory (1 hour). Continuation of grammar and spoken Chinese with more emphasis on the written language and reading; writing commonly used Chinese characters, reading selected writings. Aural training, oral practice in language laboratory. Prerequisite: Chinese 2 or equivalent. Laboratory fee, \$17.50 a semester. (Academic year—evening)

5-6 Beginning Intensive Mandarin Chinese, Levels I-II (6-6)

Lee

Classroom (6 hours), tutorial (2 hours), laboratory (1 hour). Intensive beginners' course in fundamentals of grammar and pronunciation with graded reading and practice in writing. Listening comprehension and oral practice in language laboratory. Prerequisite to Chinese 6: Chinese 5 or 2. Laboratory fee, \$17.50 a semester. (Academic year—day; summer 1969)

7-8 Intermediate Intensive Mandarin Chinese (6-6)

Wang

Classroom (6 hours), tutorial (2 hours), laboratory (1 hour). Reading basic texts; writing short pieces; conversation; systematic review of grammar. Prerequisite to Chinese 7: Chinese 4 or 6. Prerequisite to Chinese 8: Chinese 7. Laboratory fee, \$17.50 a semester. (Academic year—day)

SECOND GROUP**109-10 Readings in Modern Chinese Texts (3-3)**

Staff

Reading modern texts in literature and social sciences. Translation projects. Prerequisite: Chinese 8. (1969-70 and alternate years: academic year—day)

111-12 Beginning Classical Chinese (3-3)

Shih

(Replaces former Chinese 105 *Introduction to Classical Chinese (Intensive)* (6))

Introduction to classical writings in Chinese literature, history, and philosophy. Prerequisite: Chinese 4 or 6. (1970-71 and alternate years)

123-24 Introduction to Chinese Linguistics (3-3)

Staff

Designed for students in the Chinese language and for students in linguistics or comparative philology. Introduction to the history of the Chinese language. Analysis of linguistics structure of modern spoken Chinese and classical Chinese. Prerequisite: Chinese 4 or 6, or a course in linguistics. (Not offered 1969-70)

163-64 Chinese Literature in Translation (3-3)

Shih

Open to students who have no knowledge of the Chinese language. General survey of the development of Chinese literature from ancient times to present. Major works will be studied in terms of their historical development. (Academic year—day)

171-72 Poetry of the Tang and Sung Periods (3-3)

Staff

Reading of works of leading poets. Discussion of content and style. Prerequisite: Chinese 112. (Not offered 1969-70)

173 Yüan Drama (3)

Reading of plays by Kuan Han-ch'ing, Ma Chih-Yüan, Cheng Kuang-chu, Po P'u, and Wang Shih-fu. Prerequisite: Chinese 112. (Not offered 1969-70) Shih

177-78 Prose Narratives of the Sung, Ming, and Ch'ing Periods (3-3)

Short stories of the Sung period. Selected readings of Ming-Ch'ing novels. Historical development and stylistic traits. Prerequisite: Chinese 110. (1970-71 and alternate years) Staff

179-80 20th Century Chinese Literature (3-3)

Short stories of Lu Hsün, Lao She, Shen Tsung-wen, Mao Tun, and others. Informal essays by Lu Hsün, Chou Tso-jen, and Chu Tzu ch'ing. Poetry of Wen I-to and Kuo mo-jo. Drama of T'ien Han and Ts'ao Yü. (Not offered 1969-70) Staff

185-86 Directed Reading (3-3)

Reading of material pertaining to individual research. Admission by permission of instructor. (Academic year—day) Staff

188 Writing Seminar (3)

Lectures and discussions on bibliography and research methods. Guided research with a paper on a specific topic in Chinese literature. Prerequisite: 9 semester hours of second-group Chinese Language and Literature courses. (Not offered 1969-70) Staff

Classics

Professor J.F. Latimer (Chairman)

Associate Professorial Lecturer A.B. Seidman

Assistant Professor J.E. Ziolkowski

Adjunct Assistant Professor Mary Norton

Assistant Professorial Lecturers Mary Nutting, D.B. Beers

Bachelor of Arts with a major in Latin (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, including History 39-40.

Required: the general requirements, pages 81-85, and (1) twenty-two semester hours in Latin beyond first-group courses including Classics 131-32, 137-38; (2) Art 111, History 109 or 110, Philosophy 111. A reading knowledge of French or German, preferably both, is recommended.

Bachelor of Arts with a major in Classical Archeology and Greek (Departmental).—This interdepartmental major may be arranged in conjunction with the Department of Art. Prerequisite: the Arts and Letters curriculum, page 76, Classics 13-14, and History 39-40.

Required: in addition to the requirements, pages 81-85, twelve semester hours of second-group courses in Greek; Classics 137-138; Anthropology 183; Art 101, 102, 103, 111; History 109, 110; Philosophy 111. A reading knowledge of French or German, preferably both, is strongly recommended.

Classics 1-2 and 3-4 or 11-12 and 13-14 satisfy the foreign language requirements (see page 75). Classics 71-72 satisfies the literature requirement in Columbian College. For students entering with two years of high school Latin, Classics 3-4 will satisfy the language requirement.

LATIN AND GREEK

FIRST GROUP

1-2 First-year Latin (3-3)

Nutting and Staff

A year course: credit toward a degree at this University given on completion of Classics 2. Functional presentation of the essentials of the language, appropriate reading selections, development of English derivatives, introduction to Roman life and literature. (Academic year—day; summer 1969)

3-4 Second-year Latin (3-3)

Norton

A year course: credit toward a degree at this University given on completion of Classics 4. Continuation of Classics 1-2; emphasis on Latin readings that illustrate Roman life and literature. Prerequisite: Classics 1-2 or two years of high school Latin. (Academic year—day)

11-12 First-year Greek (3-3)

Ziolkowski

A year course: credit toward a degree at this University given on completion of Classics 12. Essentials of grammar; appropriate reading selections. Text used varies between Attic and Homeric Greek. (Academic year—day)

13-14 Second-year Greek (3-3)

Latimer

A year course: credit toward a degree at this University given on completion of Classics 14. Review of grammar; rapid reading from selected Greek authors. Prerequisite: Classics 12. (Academic year—day)

SECOND GROUP

101-2 Introduction to Latin Literature (3-3)

Norton

Selections from a wide variety of Latin authors of prose and poetry. Prerequisite: Classics 3-4 or equivalent. (Academic year—day)

103 Roman Comedy (3)

Ziolkowski

Selected plays from Plautus and Terence. Prerequisite: Classics 101-2 or permission of instructor. (Not offered 1969-70)

109-10 Latin Prose and Poetry of the Golden Age (3-3)

Norton

Selections from one or two major authors will be read each semester. May be repeated for credit. Prerequisite: Classics 101-2 or permission of instructor. Course content for 1969-70: fall—Cicero's *Letters*; spring—Lucretius. (Academic year—day)

117-18 Latin Prose and Poetry of the Silver Age (3-3)

Staff

Selections from one or two major authors will be read each semester. May be repeated for credit. (Not offered 1969-70)

131-32 Latin Prose Composition (1-1)

Exercises in Latin prose composition for Latin majors. Other students may enroll by permission of instructor. (First half: fall—as arranged. Second half: not offered 1969-70.)

- 133-34 Medieval Latin Literature and Texts (3-3)** Andrews
Wide variety of selections in prose and poetry for rapid reading. Prerequisite: Classics 101-2 or permission of instructor. May be taken for graduate credit with permission of instructor. (Not offered 1969-70)
- 135-36 Survey of Latin Literature (3-3)** Staff
Latin literature in historical sequence. For Latin majors. Other students may enroll by permission of instructor. (Not offered 1969-70)
- 137-38 Introduction to Classical Studies (1-1)** Staff
Required course for Latin or Classical Archeology and Greek majors; other students admitted with permission of instructor. Survey of the broad range of sources and resources involved in pursuing classical studies: standard references, periodicals, library holdings, papyrology, textual criticism, history of classical scholarship. (First half: fall—as arranged. Second half: not offered 1969-70.)
- 139-40 Readings in Greek Literature (3-3)** Staff
Selections from a wide variety of Greek prose, drama, and poetry, suited to the needs of the class. May be repeated for credit with permission of instructor. (Not offered 1969-70)

COURSES IN ENGLISH TRANSLATION

FIRST GROUP

- 71 Greek and Roman Epic (3)** Ziolkowski and Staff
Selections from Homer, Hesiod, Appollonius, Vergil, Ovid, Lucretius, and Lucan. (Spring—day)
- 72 Greek and Roman Literature (3)** Ziolkowski and Staff
Selections from Greek drama, history, and philosophy. (Fall—day)

SECOND GROUP

- 108 Classical Mythology (3)** Norton
Mythology of the Greeks and Romans from the creation of the world: tales of the gods, heroes, and great families that have influenced literature, art, and music. Prerequisite: English 1, 2; or equivalent. (Spring—day; summer 1969)
- 113 Greek and Roman Drama (3)** Norton
Selected masterpieces of Greek and Roman tragedy and comedy. (Fall)
—day; summer 1969)
- 124 Vocabulary Building (2 or 3)** Latimer
(Formerly Latin and Greek in Current Use)
Derivation and formation of English words stemming from Greek and Latin, together with a study of prefixes and suffixes. (Fall and spring—day)

HEBREW

Hebrew does not satisfy the foreign language requirement for Columbian College of Arts and Sciences (see page 75).

FIRST GROUP

21-22 First-year Hebrew (3-3)

Seidman

A year course: credit toward a degree at this University given on completion of Classics 22. Study of the elements of Hebrew; emphasis on sources of the language, reading comprehension, writing facility, and conversation. (Academic year—day)

23-24 Second-year Hebrew (3-3)

Seidman

A year course: credit toward a degree at this University given on completion of Classics 24. Review of grammar; continued development of reading comprehension, writing facility, and conversation. Selections from Hebrew text of the Old Testament and other materials. (Not offered 1969-70)

Economics

Professors A.E. Burns, D.S. Watson, T.W. Holland (*Emeritus*), J.W. Kendrick, C.T. Stewart, Jr., C.E. Galbreath (*Chairman*), Joseph Aschheim, R.P. Sharkey, J.L. Knetsch, Henry Solomon, G.L. Mangum (*Research*) Sar Levitan (*Research*), Louis De Alessi
 Adjunct Professors T.F. Carroll, Edward Ettin
 Professorial Lecturer John Hardt
 Associate Professors Mary Holman, Ching-Yao Hsieh, R.Y.C. Yin, W.F.E. Long
 Associate Professorial Lecturer S.E. Haber
 Assistant Professors Henry Peskin, R.W. Rafuse, Jr., B.C. Field, R.M. Dunn, Jr.
 Adjunct Assistant Professor S.A. Hoenack
 Assistant Professorial Lecturers J.M. Howell, J.N. Ellison, G.M. Lady, D.M. Heien, J.J. Horton, Jr., C.H. Stem
 Lecturer T.R. Robinson

Bachelor of Arts with a major in Economics (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, including Economics 1-2 and Statistics 51. A college-level course in calculus is strongly recommended.

Required: the general requirements, pages 81-85, and (1) Economics 101, 102 (to be completed no later than the junior year), and 198; (2) Economics 121 and 122, or 161 and 162, or 181-82; (3) twelve additional hours of second-group Economics courses, including Economics 121 if not previously elected, to be selected with the approval of the adviser; (4) Statistics 111 and 112, or equivalent.

Master of Arts in the field of Economics.—Prerequisite: the degree of Bachelor of Arts with a major in Economics at this University, or equivalent.

Required: the general requirements, pages 89-95, including (1) Economics 203-4, 205, 210; (2) twelve additional semester hours to be selected from other third-group Economics courses; and (3) a thesis (Economics 299-300).

Doctor of Philosophy fields of study in Economics: Econometrics, Economic Development, Economic History, Economic Policy, Economic Theory, History of Economic Thought, Industrial Organization, International Economics, Labor Economics, Mathematical Economics, Monetary Economics, National Income Accounting, Natural Resources Economics, Public Finance, Regional Economics, and Soviet Economics.—See pages 89-93, 95-97, for requirements for the degree.

Bachelor of Arts in the field of International Affairs.—See page 363.

242 COURSES OF INSTRUCTION

Bachelor of Arts with a major in Latin American Studies with optional emphasis in Economics (Interdepartmental).—See page 301.

Bachelor of Arts in the field of Public Affairs (Economics Option).—See page 363.

Master of Arts in the field of International Affairs.—See pages 363–64.

Master of Arts in the field of Latin American Studies with optional emphasis in Economics (Interdepartmental).—See pages 301–2.

Master of Arts in the field of Public Affairs with a specialization in Domestic Economics.—See page 364.

Departmental prerequisite: Economics 1–2 is prerequisite to all other courses in Economics.

FIRST GROUP

1–2 Principles of Economics (3–3)

Staff

Lecture (2 hours), recitation (1 hour). Survey of the major economic principles, institutions, and problems in contemporary life. Economics 1 is prerequisite to Economics 2. (First half: fall and spring—day and evening; summer 1969. Second half: fall—evening; spring—day and evening; summer 1969.)

SECOND GROUP

101 Intermediate Microeconomic Theory (3)

Watson, Field, Lady, Yin

Analysis of supply, demand, and pricing. (Fall—day and evening; summer 1969)

102 Intermediate Macroeconomic Theory (3)

Holman, Yin

Theories of national income determination and growth. (Spring—day and evening; summer 1969)

104 History of Economic Thought (3)

Hsieh

History of the major schools of economic thought, influence of changing problems on the development of economic theory. (Fall and spring—day)

105 Economics Condition Analysis and Forecasting (3)

Kendrick

Theory and empirical analyses of economic trends and fluctuations; use of economic indicators and simple econometric models; workshop experience in an analysis of an aspect of the U.S. economy. (Fall—day)

121 Money and Banking (3)

Staff

Nature of money, credit, commercial banking, and other financial institutions in the U.S. monetary system. (Fall—day and evening; summer 1969)

122 Monetary Theory and Policy (3)

Long

Analysis of role of money in economic activity in terms of supply and demand for loanable funds, determination of interest rates and price level. Problems of U.S. monetary policy. Prerequisite: Economics 121. (Spring—day)

- *123 **Introduction to Econometrics (3)**
Model construction and quantification of economic theory: relevant statistical processes and role of probability. Prerequisite: elementary course in economics and statistics. (Fall or spring—as arranged)
- 133 **Economy of the Soviet Union (3)** Hardt
Development and main features of economic life in the Soviet Union. (Fall—day)
- 134 **Comparative Communist Economic Systems (3)** Hardt
Analysis of economic development and performance of the Soviet Union and other Soviet-type economies. Institutional aspects and quantitative measures of performance. (Spring—day)
- 142 **Labor Economics (3)** Haber
Characteristics of American labor force, operations of labor market, wage theories and practices, impact of collective bargaining, causes and characteristics of unemployment, public policies and programs. (Fall and spring—day)
- †147 **Economic History of Europe (3)** Sharkey
European economic development since the Middle Ages; emphasis on the period following the Industrial Revolution. Evolution of capitalism and its impact upon the societies of Europe. (Spring—day)
- 158 **Industrial Organization (3)** Long
Analysis of the structures and production, pricing, and related practices of industries with emphasis on their significance and on appropriate economic policies. (Spring—day)
- 161 **Public Finance I (3)** Rafuse
Theoretical and institutional analysis of government expenditures, taxation, and intergovernmental fiscal relations. (Fall—day)
- 162 **Public Finance II (3)** Rafuse
Theoretical and institutional analysis of fiscal policy and debt management. (Spring—day)
- 165 **Government and Business (3)** Stewart
Survey of economic policies in the United States, economic philosophies, antitrust and other areas of regulation. (Fall—day)
- 169 **Introduction to the Economy of Communist China (3)** Yin
Background, organization, and operation of the economy. Appraisal of performance and analysis of problems of development. (Fall—day)
- †179-80 **U.S. Economic History (3-3)** Sharkey
Process of economic growth from Colonial times to the present. Development of various sectors in the economy—such as agriculture, transportation, manufacturing, and banking—and their interdependence. *First half*: 1607-1865. *Second half*: 1865 to present. (Academic year—evenings)

* Interdepartmental course offered by the departments of Economics and Statistics.
† Interdepartmental course offered by departments of Economics and History

- 181-82 **International Economics** (3-3) Aschheim, Galbreath, Dunn, Stem
First half: fundamentals of the monetary theory and pure theory of international trade. *Second half:* analysis of major contemporary problems including balance of payments, international liquidity, and economic development. (Academic year—day and evening; summer 1969)
- 185-86 **Economic History and Problems of Latin America** (3-3) Howell
 Analysis of present structures and problems of Latin American economies. (Academic year—evening)
- 195 **Governmental and Industrial Economics** (3) Ellison
 Limited to students in the Navy Graduate Financial Management Program. (Offered last time—summer 1969)
- 198 **Proseminar in Economics** (3) Solomon, Long
 Examination of major topics in economic theory and the application of theory and analysis to policy problems. Emphasis on directed individual research which combines theoretical and empirical analysis. Open only to economics majors in their senior year. (Fall and spring—as arranged)
- 199 **Independent Research in Economics** (3) Staff
 Under the personal direction of an instructor. Limited to economics majors with demonstrated capacity. Prior approval of instructor required. (Fall and spring—as arranged)

THIRD GROUP

Third-group Economics courses (except 217-18) are designed for graduate students in Economics or for graduate students with prescribed prerequisites.

- 201-2 **History of Economic Thought** (3-3) Burns, Hsieh
 Critical analysis and interpretation of the development of economic theory from Aristotle through the 19th century. (Academic year—evening)
- 203-4 **Microeconomic Theory** (3-3) Watson, De Alessi
First half: theories of the consumer and of the firm. *Second half:* theories of markets (First half: fall—day and evening. Second half: spring—evening.)
- 205 **Macroeconomic Theory** (3) Kendrick, Peskin
 Classical, Keynesian, and modern theories of income determination and employment. (Fall and spring—evening)
- 207 **Business Cycle Analysis** (3) Kendrick
 Empirical analysis of American business cycles: evaluation of the methodology and findings of the National Bureau of Economic Research. Statistical tests of theories of the business cycle. (Spring—evening)
- 208 **National Income** (3) Kendrick
 Theory and measurement of economic aggregates within an integrated national income accounts framework including balance sheets and wealth statements. (Spring—evening)
- 210 **Seminar in Economics** (3) Stewart
 Methodology of economics, review of contemporary macroeconomics and microeconomics both in their positive and normative aspects. Open only

to students who have completed 15 hours of graduate work in economics.
(Fall and spring—evening)

215-16 Mathematical Economics (3-3)

Solomon

Formulation and application of mathematical models in economic theory. Includes applications of the calculus, differential and difference equations, matrix theory, mathematical programming, and probability theory. Prerequisite: Economics 203-4 and 205, and a one-year calculus sequence. (Academic year—evening)

217-18 Survey of Economics (3-3)

Holman

For graduate students in fields other than economics. *First half*: price theory. *Second half*: income and employment theory. Not open to graduate students in Economics. (Academic year—evening; summer 1969)

223-24 Monetary Theory and Policy (3-3)

Aschheim, Ettin

Theory of monetary policy within the framework of contemporary American central banking. (Academic year—evening)

233-34 Seminar: Land Policy Problems in Latin America (3-3)

Carroll

Analysis of current issues of land and water resource problems and policies related to economic development in Latin American countries, and evaluation of programs and projects supported by international assistance. (Academic year—evening)

237 Seminar: Economics of Natural Resources Policy (3)

Field

Analysis of public policy problems relating to natural resources development and management. Specific topics include public investment criteria, time discounting problems, regional analysis, and project evaluation. (Fall—evening)

238 Research Seminar: Natural Resources Economics (3)

Field

Discussion of student research projects; particular attention to the role of hypothesis, data adequacy, evaluatory criteria, testing procedures, and interpretation. (Spring—evening)

241-42 Labor Economics (3-3)

Staff

Analysis of labor markets, theories of wages, impact of collective bargaining, causes of unemployment, public policies and programs. (Academic year—evening)

243 Seminar: Manpower Policy (3)

Levitan, Mangum

Developments leading to expansion of public investment in manpower resources; evaluation of goals and operations of publicly supported programs; role of federal, state, and local governments and private institutions. (Fall and spring—evening)

251-52 Economic Development (3-3)

Staff

Theories and problems of economic growth; special attention to the underdeveloped countries. (Academic year—evening)

253 Productivity Analysis (3)

Kendrick

Concepts, measurement, and analysis of productivity in business and government at aggregate and organizational levels. (Fall—evening)

261 Welfare Economics (3)

Stewart

Theories of welfare economics and their applications to public policy; analysis of selected topics in public policy. (Fall—evening)

263 Theory of Public Finance I (3)

Rafuse

Allocation and distribution aspects of government budget policy including critical analysis of theories and principles of expenditures, taxation, and intergovernmental fiscal relations. (Fall—evening)

264 Theory of Public Finance II (3)

Rafuse

Stabilization aspects of government budget policy: analysis of effects of fiscal policy and debt management on level of employment, prices, and rate of economic growth. (Spring—evening)

265 Economics of Regulatory Policy (3)

Staff

Analysis of economic impact of government regulatory policies and practices. (Not offered 1969-70)

266 Antitrust Policy (3)

Staff

Historical background; economics of monopoly, impact of antitrust legislation and policy. (Spring—evening)

267 Seminar: Soviet Economy (3)

Hardt

Development of the Soviet-type economy. Organization, policies, and problems: monetary, fiscal, production, allocative, foreign trade, economic growth. Workshop: case studies on sectoral or problem areas. Prerequisite: graduate status; Economics 101, 102, 133, and 134, or equivalent; permission of instructor. (Fall—evening)

268 Seminar: Economic Theory and Development in Communist Countries (3)

Hardt

Appraisal of the Soviet-type model for economic development in the institutional framework of Soviet and other communist processes of economic development. Workshop: case studies on Eastern Europe, Chinese and other communist economies. Prerequisite: graduate status; Economics 101, 102, 133, and 134, or equivalent; permission of instructor (Spring—evening)

269 Economy of Communist China I (3)

Yin

Analysis of organization, operation, policies, and problems. Development of the economy under communism. (Fall—evening)

270 Economy of Communist China II (3)

Yin

Continuation of Economics 269, examining critical problems of development. Prerequisite: Economics 269 or permission of instructor. (Spring—evening)

275 Econometrics I: Introduction (3)

Peskin, Heien

Survey of applications and introduction to statistical methods for estimating economic relationships for the economist with some mathematical facility. Prerequisite: one year of elementary statistics and Economics 203-4 and 205, or equivalent as approved by instructor. (Fall—evening)

***276 Econometrics II: Theory and Method (3)** Hoenack

Continuation of Economics 275; emphasis on errors in variables, confluence, nonspherical disturbances, identification, and multi-equation estimation. Prerequisite: Economics 275. Recommended: a course in matrix theory. (Spring—evening)

***277 Econometrics III: Special Topics in Econometrics (3)** Hoenack

Continuation of Economics 276. Special topics on single-equation and multi-equation estimation. Prerequisite: Economics 276 or equivalent. (Fall—evening)

281-82 International Economics (3-3) Dunn

First half: theory of international trade and factor movements. *Second half:* theory of balance-of-payments adjustment. (Academic year—evening)

285-86 Economic Development of Latin America (3-3) Staff

Current policies and programs, capital formation, public and private; foreign loans and investment; social and technological preconditions of investment. (Not offered 1969-70)

287 Seminar: Problems in Latin American Civilization (3) Rodríguez

Interdisciplinary seminar guided by a specialist within the methodology of his chosen discipline; each student writes a report on some aspect of a key theme (i.e., Nationalism) in Latin America's experience. Admission by permission of instructor. (Spring—day)

299-300 Thesis Research (3-3) Staff

(Academic year—as arranged; summer 1969)

FOURTH GROUP

Fourth-group Economics courses are limited to graduate students, but they are primarily for doctoral candidates. They are offered as the demand requires.

312 Seminar: Price Theory (3) Watson, De Alessi

Discussion of topics of price theory from recent journal articles.

313 Seminar: Economic Thought in the 20th Century (3) Burns

Continuation of Economics 201-2. Principal trends in English, Continental, and American economic thought during the present century.

315 Seminar: Topics in Mathematical Economics (3) Solomon

Intensive study of selected topics including economic activity analysis, risk and uncertainty, and other topics of current interest. Prerequisite: Economics 215-16.

321 Seminar: Monetary Theory (3) Aschheim

Recent developments in monetary theory.

341 Seminar: Labor Economics (3) Staff

Current problems in theory and policy.

363 Seminar: Public Finance (3) Rafuse

Selected topics of current interest.

* Interdepartmental course offered by departments of Economics and Statistics.

- 378 Seminar: Topics in Econometrics (3)** Peskin
A research seminar covering current econometric literature. Prerequisite: Economics 276. (As arranged)
- †379-80 Readings in Economic History (3-3)** Sharkey
Prerequisite: the appropriate second-group preparation and consent of instructor. (Academic year—evening)
- 390 Seminar: International Economic Theory (3)** Staff
Examination of recent contributions in this field.
- 391 Seminar: International Economic Policy (3)** Staff
Topics selected from current significant policy problems.
- 398 Advanced Reading and Research (arr.)** Staff
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)
- 399 Dissertation Research (arr.)** Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Education

Professors B.S. Root (*Chairman*), G.L. Angel, W.T. Carroll, Carol St. Cyr, Mary Ellen Coleman, H.G. Detwiler, Daniel Sinick, R.E. Baker, Martha Rashid, Rodney Tillman

Professorial Lecturers Anthony Marinaccio, J.B. Holden, W.W. Chase, W.E. Amos, C.E. Bish, A.H. Livermore

Associate Professors Leonard Nadler, C.O. McDaniels, Marcella Brenner, J.S. Aven (*Research*), J.G. Boswell, Margaret McIntyre, E.S. Beach, Jr.

Associate Professorial Lecturers LuVerne Walker, Beverly Heinle, Martha Ware, S. R. Westerlund, P.E. Arsenault, K.W. Rollins, Samuel Culbert, David Iwamoto, C.E. Vontress

Assistant Professors Gloria Horrworth, C.A. Neyman, Jr. (*Research*), Donald Linkowski, Dorothy Moore, Lawrence Winkler

Assistant Professorial Lecturers R.J. Kubalak, Shirley McCune, J.D. Gates, Marjorie Daly, Marianne Phelps, Abbie Smith, Helena Lietwiler, Carla Heymsfeld, Anne Hoyle, Agnes Lawless, V.E. Greaver, D.B. Fleming, Jr., R.E. McNelis

Bachelor of Arts in Education.—Prerequisite: the Education curriculum, page 78, or equivalent, or a certificate of graduation from an approved normal school or equivalent.

Required: the satisfactory completion of a program of at least sixty-six semester hours in addition to the prerequisite courses. Each program is planned individually to meet the certification requirements of the student, see pages 101-14.

American Civilization 101 is recommended as a senior-year elective.

Master of Arts in Education.—Prerequisite: a Bachelor's degree from an accredited institution. Programs are planned individually (see pages 116-19).

* Interdepartmental course offered by the departments of Economics and Statistics
† Interdepartmental course offered by the departments of Economics and History.

American Civilization 101 is available for graduate credit.

Master of Arts in Teaching.—Prerequisite: a Bachelor's degree in a liberal arts program from an accredited institution, see pages 123–24.

Education Specialist.—See pages 119–20.

Doctor of Education.—See pages 120–23.

SECOND GROUP

107 Elementary School Teaching Foundations (9) Brenner, Horrworth

Limited to students in the M.A.T. Program in Elementary Education. A block course, dealing with the content of traditional courses in educational psychology; history of education; human development, learning, and teaching; society and the school; introduction to elementary education. 135 class hours, supplemented by field experiences. (Summer 1969)

108 Human Development, Learning, and Teaching (3) Staff

Lecture (2 hours), conference (1 hour), field work (3 hours). Principles of effective teaching based on an understanding of human development and the nature of learning. Prerequisite: Psychology 22. (Fall and spring—day and evening; summer 1969)

111 Elementary School Curriculum and Methods (15) Moore and Staff

For seniors. Procedures in teaching mathematics, science, social studies, language arts (reading, literature, spelling, handwriting, and oral and written expression), art, music, and physical education. Observations and participation two mornings a week. Prerequisite: Education 108 and 123. (Fall—day)

112 Educational Measurement (3) Iwamoto, Winkler

Scope, needs, services to students, selection and construction of teacher-made tests, interpretation of tests for evidence purposes. Prerequisite: Education 108 and 123. (Fall and spring—day and evening; summer 1969)

113 Elementary School Art (3) Heinle

For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22. Material fee, \$5. (Spring: lecture and laboratory (3 hours)—evening, field work—arranged; summer 1969)

114 Elementary School Music (3) Daly

Lecture (2 hours), field work (2 hours). For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22. (Summer 1969)

115 Elementary School Teaching of Reading (3) Hoyle

Introduction to methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 108 and 123, or teaching experience. (Summer 1969)

116 Elementary School Social Studies (3) Moore

Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123, or teaching experience. (Not offered 1969–70)

* This course may not be taken by students who have completed or plan to enroll in Education 111.

***117 Elementary School Science (3)**

St. Cyr

Lecture (2 hours), field work (2 hours). Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123, or teaching experience. (Not offered 1969-70)

119 Elementary School Curriculum (12)

Brenner and Staff

Limited to students in the M.A.T. Program in Elementary Education. A block course; reading, children's literature, communication arts, arithmetic, science, social studies, art, music, and physical education. 180 class hours, supplemented by appropriate observations and field experiences. (Fall—day)

***120 Elementary School Mathematics (3)**

St. Cyr

Content, methods, materials, concepts of "new mathematics," and activities essential in the elementary school curriculum. Prerequisite: Education 108 and 123, or teaching experience. (Not offered 1969-70)

123 Society and the School (3)

St. Cyr and Staff

Lecture (2 hours), conference (1 hour), field work (2 hours). Historical and social development of education at local, national, and international levels; cooperation of the school with other community agencies; functions of school personnel. (Fall and spring—day and evening; summer 1969)

***128 Children's Literature (3)**

Walker, McIntyre

Newer books for children and the children's classics, contribution of literature to child development, children's original expressions. (Spring—lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1969)

130 Internship in Elementary Education (3 to 6)

Brenner, Horrworth

Limited to students in the M.A.T. Program in Elementary Education. Full-time teaching in an elementary school under cooperative supervision of the school system and the University staff. Admission by permission of instructor. Prerequisite: Education 119 or equivalent. (Spring—as arranged)

131 Secondary School Principles and Methods (3)

Boswell

For seniors. Classroom management and teaching techniques for initiating, guiding, and evaluating learning activities. Prerequisite: Education 108 and 123. Field work in the public schools to be arranged. (Fall and spring—day)

133 Supervised Experience in Adult Education (3 to 6)

Kirkbride, Nadler

Field work, internship, and instructional practice in adult education, employee training, or higher education. May be repeated for credit. Admission by permission of instructor. (Fall and spring—as arranged)

134 Student Teaching in Secondary Schools (6 to 9)

Boswell and Staff

For seniors. Sections A, B, and C are for full-time academic majors. Section D is for physical education majors (Hanken, Stallings). Admission by permission of instructor. Prerequisite: Education 131. (134A—fall—as arranged; 134A, 134B, 134C, and 134D: spring—as arranged)

* This course may not be taken by students who have completed or plan to enroll in Education 111

- 135 Student Teaching in Elementary Schools (6 to 9)** Moore and Staff
For seniors. Admission by permission of instructor. Prerequisite: Education 111 or equivalent. (Fall and spring—as arranged)

SPECIAL METHODS COURSES

To be elected in the senior year by students in the secondary school curriculum after substantial preparation in the teaching fields concerned. Course requirements and hours of credit vary with license requirements. Practices of successful teachers studied; actual teaching content as found in current tests and courses of study reviewed.

Prerequisite to all special methods courses: Education 108, 123, and 131. Additional prerequisites are stated under each course.

- 136 Teaching English in Secondary Schools (3)** McNelis
Prerequisite: 18 semester hours in English. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged)
- 137 Teaching Speech (3)** Richards
Lecture (2 hours), field work (2 hours). Prerequisite: 18 semester hours in speech or permission of instructor. (Not offered 1969–70)
- 138 Teaching Social Studies in Secondary Schools (3)** Boswell
Prerequisite: 24 semester hours of social studies. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged)
- 139 Teaching Art in Secondary Schools (3)** Heinle
Prerequisite: 24 semester hours of Art. Material fee, \$4.50. (Spring: lecture (2 hours), laboratory (2 hours)—evening)
- 140 Teaching Mathematics in Secondary Schools (3)** Gates
Prerequisite: mathematics through calculus. (Spring—evening)
- 141 Teaching Latin (3)**
Objectives; construction of courses of study; techniques of motivation, presentation, and drill; areas of enrichment. For junior and senior high school teachers. (Not offered 1969–70)
- 142 Teaching Music in Secondary Schools (3)**
Prerequisite: 24 semester hours of Music. (Not offered 1969–70)
- 144 Teaching Science in Secondary Schools (3)** Livermore
Prerequisite: 24 to 40 semester hours of science. (Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged)
- 146 Teaching Foreign Languages (3)** Arsenaault
Prerequisite: 18 semester hours of one foreign language. (Spring—day)

THIRD GROUP

Departmental prerequisite: A degree from an accredited institution is prerequisite to all third-group courses in Education.

- 203-4 **Comparative Education (3-3)** Moore
Comparison of United States with foreign educational systems, particularly those of Russia, West Germany, Denmark, Switzerland, France, the British Isles, Canada, and Australia. (Academic year—evening)
- *205-6 **The Curriculum (3-3)** St. Cyr
For experienced teachers. *First half:* curriculum foundations and issues, comparison of curriculum patterns. *Second half:* curriculum development in subject areas, group consideration of student problems. (Academic year—Saturday morning)
- 207 **Curriculum Materials (3 to 6)** St. Cyr
For experienced teachers. Construction of courses of study and classroom teaching aids, with direct application to students' situations. (Summer 1969)
- *208 **Human Development (3)** Rashid, McDaniel
Contribution of various disciplines to an understanding of human development throughout the life span; emphasis on practical implications of relevant research. (Fall—day; spring—evening; summer 1969)
- 209 **Child Development (3)** Rashid
Interdisciplinary approach to child development. Analysis, interpretation, and practical implications for instruction of research in disciplines contributing to a knowledge of child development. (Fall—evening)
- 210 **Adolescent Development (3)** McDaniel
Interdisciplinary approach to adolescent growth and development. Analysis, interpretation, and practical implications for instruction of research in disciplines contributing to a knowledge of the adolescent. (Spring—evening)
- 212 **Educational Measurement (3)**
Basic measurement techniques: construction, selection, administration, and interpretation of objective and essay-type examinations; statistical analysis of test results; laboratory use of test instruments. (Not offered 1969-70)
- 213-14 **History of Education (3-3)**
First half: European backgrounds of American education. *Second half:* evolution of the American school system. (Academic year—evening; summer 1969—Education 213)
- 216 **Education of Slow-learning Children (3)** Amos
Identification, nature, and needs of slow-learning elementary and junior high school children. Emphasis on diagnosis and treatment of learning difficulties. (Summer 1969)
- *217-18 **Philosophy of Education (3-3)**
First half: to help students formulate a personal philosophy of education. *Second half:* social foundations of education—forces that shape policies and offerings of the school. (Academic year—Saturday morning; summer 1969—Education 217)

* Prerequisite: adequate professional preparation.

- *219 Elementary School Classroom Procedures (3)** Baker
Current classroom practices; emphasis on planning, unit teaching, techniques in discipline; individual and group evaluation techniques, resources for learning, providing for individual differences. (Summer 1969)
- 223-24 Reading Problems (3-3)** Coleman
Elementary and secondary school reading difficulties; classroom and clinical techniques in solving reading problems. Prerequisite: one or more years of recent teaching experience. (Academic year—evening; summer 1969—Education 223)
- 226 Reading in Secondary School and College (3)** Coleman
Methods, techniques, and materials necessary for developing efficient reading skills, including skills in content subjects; organizing and evaluating reading programs. (Spring—evening)
- 227 Basic Issues in Elementary Education (3)** Baker
Identification, definition, and analysis of some of the most important problems facing the contemporary American elementary school. (Fall—Saturday morning)
- 228 Instructional Areas in Elementary Education (3)** Baker
Objectives, organization, content, and teaching methods in language arts, arithmetic, social studies, science, arts and crafts, health and physical education. (Spring—Saturday morning)
- 229 Administration of Elementary Education (3)** Carroll
For experienced teachers and administrators. Achieving instructional objectives, organizing and servicing teaching activities, coordinating school and community life. (Fall—evening; summer 1969)
- 230 Intern Seminar: Elementary School Teaching (3)** Brenner, Horrworth
Limited to students in the M.A.T. Program in Elementary Education. Scheduled weekly meetings for discussion of common problems and for cooperatively planned work on areas of individual and groups needs. (Spring—Saturday morning)
- 231 Secondary School Classroom Procedures (3)** Boswell
Current classroom practices: teacher-pupil planning, group procedures, initiatory and culminating activities, individual and group evaluation techniques, teaching aids, etc.; review of recent literature. (Summer 1969)
- 232 Supervision of Elementary Education (3)** Carroll
For experienced teachers and administrators with two or more years of teaching experience. Review of modern supervisory concepts including practices in the operation of the elementary school. (Spring—evening)
- *233 Audio-visual Education (3)** Kubalak
Lecture (2 hours), laboratory (1 hour). Selection, evaluation, and use of audio-visual materials; administrative problems in care, operation, maintenance, and use of such materials and equipment. Material fee, \$7. (Spring—Saturday morning; summer 1969)

* Prerequisite: adequate professional preparation.

- 241 Education of the Gifted (3)** Rashid, Bish
For classroom teachers. Nature and discovery of giftedness, provisions for the gifted in regular classes, experimental projects. (Spring—evening; summer 1969)
- 243 Human Relations in the Classroom (3)** Marinaccio
Principles and practices involved in interpersonal relationships between learner and teacher and among learners. (Summer 1969)
- 245 School and Community (3)** Angel
The school as an important member of a team of social agencies that builds the community. (Spring—evening; summer 1969)
- 247 Vocational Education (3)**
Development, current conceptions, agencies involved, problems, and trends in the United States and foreign countries at secondary and post-secondary levels. (Not offered 1969-70)
- 251 Foundations of Guidance and Personnel Services (3)** Detwiler
Introductory survey: definitions, scope, principles, historical background, organization, services, emerging trends, and issues. (Fall and spring—evening; summer 1969)
- 252 Organization and Administration of Guidance Services (3)** Winkler
For guidance directors, supervisors, and experienced school counselors who hope to qualify for such positions. Prerequisite: a minimum of 15 semester hours of approved graduate work in measurement and guidance (Not offered 1969-70)
- 253 Analysis of the Individual for Purposes of Counseling (3)** Detwiler
Detailed study of individual analysis and appraisal techniques. Development of systematic case study. Prerequisite: Education 112 or equivalent. (Fall and spring—evening; summer 1969)
- 254 The Middle School (3)**
(Formerly *The Junior High School*)
Purposes, organization, core program, guidance, developing course of study, extra-classroom activities. (Not offered 1969-70)
- *255-56 Secondary Education (3-3)** Root
First half: current proposals for improvement of secondary education
Second half: current problems in each subject-matter field. (Academic year—evening; summer 1969)
- 257 Educational and Occupational Development (3)** McDaniel
Theories of career development; structure of education, training, and work in the United States; sources, forms, collection, evaluation, and dissemination of educational-occupational information. (Fall--late afternoon; spring—evening; summer 1969)
- 258 Techniques of Counseling (3)** Detwiler, Linkowski
Intensive study of educational and psychological processes involved in counseling interviews. Vocational, educational, and personal counseling problems. Prerequisite: 12 semester hours in testing and guidance, in-

* Prerequisite: adequate professional preparation

cluding Education 253 and 257. In exceptional cases Education 253 or 257 may be taken concurrently with 258. (Fall and spring—evening; summer 1969)

***259 Secondary School Administration (3) Beach**

For experienced teachers and administrators with two years of secondary school teaching. Survey of administration including practices of the modern high school. (Fall—evening; summer 1969)

***260 Secondary School Supervision (3) Beach**

For experienced teachers and administrators with two or more years of teaching experience. Review of modern supervisory concepts including practices followed in the operation of the school. (Spring—evening)

***261 Practicum in Guidance (3 to 6) Detwiler**

Supervised practical instruction. Prerequisite: graduate work in counseling. Admission by permission of Department Chairman. (Fall and spring—as arranged; summer 1969)

263-64 Employee Development (3-3) Nadler
(Formerly Employee Training)

First half: nature and purpose, review of major programs—orientation, supervisory, apprentice, clerical skills, communication. *Second half:* administrative problems and practices, training media, coordination with other management functions. Prerequisite: adequate professional preparation or two years of experience in employee training. (Academic year—evening)

†265 Teaching Secondary School English—Materials, Resources, Content (3)

For experienced teachers. Review of curriculum patterns. Discussion of current and new approaches to course content. (Fall or spring—as arranged)

†267 Teaching Secondary School Social Studies—Materials, Resources, Content (3) Boswell

For experienced teachers. Review of curriculum patterns. Discussion of current and new approaches to course content. (Fall or spring—as arranged)

***269-70 Business Management of Schools I-II (3-3) Beach**

First half: philosophy, responsibilities, and functions of the business management office in public education institutions. *Second half:* practicum in educational business management. (Academic year—late afternoon)

***271 The Teacher and School Administration (3) Carroll, Beach**

Role of federal, state, and local administrative units; school finance; legal controls; school plant; public support; improving teaching conditions. (Fall—evening; spring—Saturday morning; summer 1969)

***272 The Teacher and School Supervision (3) Carroll, Beach**

Nature, organization, human relationships, and techniques. (Fall—Saturday morning; spring—evening; summer 1969)

* Prerequisite: adequate professional preparation.

† Offered through the College of General Studies in cooperation with the D.C. Public Schools

***273-74 Teacher Education (3-3)**

Boswell

First half: aims, objectives, and basic issues; study of outstanding and experimental programs. *Second half:* recruitment and selection, general education, teaching-field preparation, professional sequences, laboratory experiences. (Academic year—evening)

***275 Seminar: School Finance (3)**

Carroll

Educational financial theory, practice, and control, including methods of financing. (Not offered 1969-70)

***276 Seminar: Public Relations in School Administration (3)**

Carroll

Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy making. (Not offered 1969-70)

***278 School Law (3)**

Ware

Sources and scope of school law; legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group. (Spring—evening)

***279-80 Adult Education (3-3)**

Nadler

First half: current concepts and objectives, agencies involved, programs on all levels—international through community. *Second half:* the adult as a learner, the teacher of adults, learning-teaching activities, administration of adult education programs. (Academic year—evening; summer 1969—Education 279)

***283 Higher Education in the United States (3)**

Angel

Development, scope, purposes, present status, programs, and trends in higher education in the United States. (Fall—evening)

***284 Administration of Higher Education (3)**

Angel

Government, organization, and administration of colleges and universities. (Spring—evening; summer 1969)

***285 Student Activities (3)**

Angel

Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contest; attention to sponsorship, participation, finance, and evaluation. (Summer 1969)

***287-88 Clinical Study of Reading Problems (3-3)**

Coleman

For advanced students. Diagnostic and corrective work under supervision of the Reading Center. Prerequisite: Education 223-24 or equivalent. Material fee, \$10 a semester. (Academic year—evening)

***289 Supervisory Problems in Reading (3)**

Coleman

For experienced teachers, principals, supervisors, and superintendents. Problems in planning, reorganizing, and improving the total reading program and in promoting cooperative staff effort toward increasing teaching efficiency. (Spring—evening)

291 Planning the School Plant (3)

Chase

Selection of sites; evaluation of existing buildings; utilization of present facilities; adaptation to curricular needs; building, operation, and maintenance problems. (Fall—evening)

* Prerequisite: adequate professional preparation.

- 293-94 Research (3-3)** **Staff**
Individual research under guidance of a staff member. Program and conferences arranged with an instructor. (Academic year—as arranged; summer 1969)
- *295 Research Methods and Procedures (3)** **Rashid, Winkler**
Required of all candidates for graduate degrees in Education. To be taken early in the graduate program. Prerequisite: elementary course in statistics. (Fall and spring—day and evening; summer 1969)
- *296 Seminar: Educational Research (3)** **Rashid**
Analysis of scientific approaches to problems in education and evaluation of the application of research techniques. Required of all candidates for the Ed.D. degree. Prerequisite: Education 295 or equivalent. (Fall and spring—evening; summer 1969)
- *297 Personnel Administration (3)** **Carroll**
Organization and administration of personnel programs for educational institutions. Basic philosophy, principles, responsibilities, and functions. (Fall—evening; summer 1969)
- *298 Seminar: Personnel Administration (3)** **Carroll**
Research: policies, rules and regulations, staff organizations, negotiations. (Spring—evening)
- 299-300 Thesis Research (3-3)** **Staff**
Required of Master of Arts in Education candidates writing Master's theses. (Academic year—as arranged; summer 1969)
- *301 Data Processing in Education (3)** **McCarthy**
Machine accounting and computer technology for counselors, teachers, and administrators. (Summer 1969)
- 316 Curriculum Developments in Elementary School Social Studies (3 to 6)** **Moore**
For experienced educational personnel. Research, techniques, materials, and innovative programs relating to the effective elementary school social studies curriculum. Admission by permission of instructor. (Summer 1969)
- 317 Curriculum Developments in Elementary School Science (3 to 6)** **St. Cyr**
For experienced educational personnel. Research, techniques, materials, and innovative programs relating to the effective elementary school science curriculum. Admission by permission of instructor. (Spring—evening; summer 1969)
- 320 Curriculum Developments in Elementary School Mathematics (3 to 6)** **St. Cyr**
For experienced educational personnel. Research, techniques, materials, and innovative programs relating to the effective elementary school mathematics curriculum. Admission by permission of instructor. (Summer 1969)

* Prerequisite: adequate professional preparation.

- 331 Development of the Young Child (3)** McIntyre
Lecture and laboratory. Basic concepts and problems of child development; observation, behavior patterns, child study. (Fall—evening)
- *332 Curriculum for Early Childhood (3 to 4)** McIntyre
Lecture and field. Language arts, science, mathematics, social studies, and the creative arts, emphasizing adaptation to skills and needs of the young child; review of new programs. (Spring—evening; summer 1969)
- 333 Early Childhood Classroom Management (3 to 4)** McIntyre
Lecture and field. Planning, reporting, records, equipment, space use, working with parents, and survey of types of preschools. (Fall—evening)
- 334 Community Resources for the Young Child (3 to 4)** McIntyre and Staff
Lecture and field. Use of community agency services and specialists in pertinent fields. (Spring—late afternoon)
- 335 Practicum in Early Childhood Education (3 to 6)** McIntyre
Supervised teaching and seminar in the early childhood field. Prerequisite: Education 331, 332, and 333; or equivalent; and permission of instructor. (Fall and spring—day)
- 352 Advanced Career Development (3)** McDaniels
Advanced workshop for experienced counselors; theory and uses of new educational media in guidance; field study of job opportunities in area business, industry, and government agencies. Admission by permission of instructor. (Summer 1969)
- 355 Counseling in Groups (3)** Staff
For experienced counselors and psychologists. Peer-group relationships with emphasis on adolescent groups. Principles of group dynamics as related to interaction within groups. Techniques and practice in group counseling. (Fall—late afternoon)
- 356 Seminar: Guidance and the Disciplines (3)** Staff
For experienced counselors. Exploring the foundations of guidance through the disciplines of psychology, sociology, economics, anthropology, and philosophy. (Not offered 1969-70)
- 357 Mental Hygiene (3)** Winkler, McDaniels
Mental health problems; emphasis on needs of counselors, teachers, and others working with children and adolescents. (Fall and spring—evening; summer 1969)
- 361 Medical Aspects of Rehabilitation Counseling (3)** Sinick
Etiology, symptomology, and treatment of chronic and traumatic disorders with rehabilitation counseling implications. Admission by permission of instructor. (Fall—day)
- 362 Client Evaluation in Rehabilitation Counseling (3)** Sinick
Test and nontest methods of furthering client and counselor understanding. Prerequisite: Psychology 131. (Spring—as arranged)

* Prerequisite: adequate professional preparation

- 363 **Psychosocial Aspects of Rehabilitation Counseling** (3) Linkowski
Impact of congenital and later disabilities on attitudes, self concepts, and motivations. Implications for rehabilitation counseling. Admission by permission of instructor. (Fall—day)
- 365-66 **Field Work in Rehabilitation Counseling** (3-3) Sinick
Field work of one full day a week. *First half*: concurrent seminar covering history, philosophy, and introduction to practices. *Second half*: concurrent seminar covering job analysis, placement, and followup. Education 365 is prerequisite to Education 366. Admission by permission of instructor. (Academic year—as arranged)
- 367-68 **Internship: Rehabilitation Counseling** (6-6) Linkowski
Supervised practice of three full days a week, with seminar providing integration of theory and practice. Prerequisite: Education 365-66. (Academic year—as arranged)
- 369 **Professional Issues in Rehabilitation Counseling** (3) Sinick
Culminating seminar covering professional problems and ethical issues. Prerequisite: Education 367. (Spring—as arranged)
- 373 **The Junior-Community College** (3) Angel
Development, organization, curriculum, role, issues, and problems of the junior-community college. (Fall—evening)
- 374 **Current Issues in Higher Education** (3) Angel
Investigation of current issues in higher education. (Spring—evening)
- 375 **Introduction to Student Personnel Work** (3) Kirkbride
(Formerly Education 286)
Student personnel services in American higher education. Personnel work as an integral part of the college program; introduction to the literature of the field. (Fall—day; summer 1969)
- 376 **Student Personnel Work with College Groups** (3) Kirkbride
(Formerly Education 248)
Principles and procedures of personnel work with campus groups. Promotion, limitation, and coordination of campus group activities; development of student leadership. (Spring—day; summer 1969)
- 377 **Practicum in Student Personnel Work** (3) Phelps
(Formerly Education 250)
Supervised practical experience in student personnel services. Admission by permission of instructor. (Fall and spring—as arranged)
- 378 **Practicum in Teacher Education** (3 to 6) Brenner, Boswell
For selected, experienced teachers. Supervised practical experiences in interpersonal relationships in the school setting. Correlated research and reporting. Field work relevant to student's professional needs, to be arranged. (Spring—day)
- 379 **Practicum in Adult Education** (3 to 6) Nadler
Supervised practical experience in various forms of adult education. May be repeated for credit. Admission by permission of instructor. (Fall and spring—as arranged)

380 Sensitivity Training: Laboratory Method (3)

McCune, Culbert

A sensitivity learning experience in human relations using unstructured group experience, individual feedback, experimentation, and practice. Admission by permission of instructor. (Fall—evening; summer 1969)

381 The Adult as a Learner (3)

Angel

Psychology of learning as applied to adults; effect of age on learning; physical and social environment in adult education situations. (Fall—evening)

382 Methods in Adult Education (3)

Methods, techniques, and devices in adult education; traditional methods, developing action-oriented learning situations, programmed instruction, and systems approach in developing training materials. (Fall—evening)

383 Counseling of Adults (3)

Vontress

Concepts and practices with particular emphasis on the needs of adults in work situations. (Spring—evening)

384 Evaluation of Adult Education (3)

McCune

Measurement and evaluation of adult education in school and nonschool agencies—business, industry, government, voluntary, and community. (Spring—evening)

386 Current Issues in Adult Education (3)

Holden

Investigation of current issues in adult education. (Spring—evening)

387 Administration of Adult Education (3)

Staff

Program planning, staff development, fiscal operations, facilities, and maintenance of effective community relations. (Spring—evening)

FOURTH GROUP

A Master's degree from an accredited institution is prerequisite to all fourth-group courses. All seminars listed in the fourth group are open to doctoral candidates or other post-Master's degree students with approval of instructor. Study is individually planned on the basis of previous study and experience in the subject field to attain an advanced level of competence and meet identified professional needs or field requirements in a doctoral program.

Each of the following courses is offered fall and spring, as arranged, and summer 1969. Each course may be repeated for credit.

401 Seminar: History of Education (arr.)

403 Seminar: Philosophy of Education (arr.)

405 Seminar: Human Growth and Development (arr.)

411 Seminar: Elementary Education (arr.)

413 Seminar: Secondary Education (arr.)

421 Seminar: Adult Education (arr.)

423 Seminar: Higher Education (arr.)

424 Seminar: Personnel Work in Higher Education (arr.)

Rashid

Baker

Root

Nadler

Angel

Kirkbridge

| | |
|---|---------------------|
| 425 Seminar: Teacher Education (arr.) | Boswell, Baker |
| 427 Seminar: Employee Development (arr.) | Nadler |
| 431 Seminar: Administration (arr.) | Beach, Carroll |
| 433 Seminar: Supervision (arr.) | Beach, Carroll |
| 435 Seminar: Elementary Administration (arr.) | Carroll |
| 437 Seminar: Secondary Administration (arr.) | Beach |
| 441 Seminar: Curriculum (arr.) | St. Cyr |
| 443 Seminar: Guidance and Counseling (arr.) | McDaniels, Detwiler |
| 445 Seminar: Research and Evaluation (arr.) | Rashid |
| 491 Dissertation (arr.) | Staff |

Preparation of a research outline; research and writing of an approved doctoral dissertation under the direction of major adviser and dissertation committee.

English

Professors C.D. Linton, C.W. Cole, R.H. Moore, J.H. Coberly, P.H. Highfill, Jr., J.G. Allee, Jr., J.P. Reesing, Jr. (*Chairman*), R.H. Walker, Jr., Milton Crane, E.R. Weismiller

Adjunct Professor J.C. Broderick

Associate Professors W.L. Turner, Muriel McClanahan, Elizabeth Wright, R.N. Ganz, Jr., G.E. McCandlish, C.C. Mondale, A.E. Claeysens, Jr., R.C. Rutledge

Assistant Professors J.A. Quitslund, L.C. Schaefer, Margaret Sullivan, Barbara Dunham, J.W. Claiborne, Joan Caton, Mary McHenry

Assistant Professorial Lecturers J.J. Monroe, Harrison Clark, Margery Sabin

Instructors Mary Walden, D.M. Atwood, Pastora San Juan, Diane Weber, Margaret Bonney, Nancy Bunge, Catherine Cook, Evelyn Lynch, Fredrica Rosenberg

Lecturers Edgar Boling, Jr., J.A. Javens, Olivia Rivers, Elizabeth Caffin, Judith Carlberg, Alice Digilio, Leah Douthitt, Gail Ellyson, Karen Heidt, Carolyn Karcher, Forrester Maphis, Edith Perruso, Alice Rice, L.S. Sorley III, Jane Takeuchi, Ronald Thomas, Mary Weber, Susan Williams

Bachelor of Arts with a major in Literature (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 76.

Required: the general requirements, pages 81–85, and the passing of the Literature major examination at the end of the senior year.

There are two options in the Literature major: (1) with an emphasis on English literature and (2) with an emphasis on American literature. In each option the field of coordinated knowledge upon which the student will be examined at the end of his senior year includes both English and American literature (the history of the literature; the chief writers, and a reasonable acquaintance with the social, political, and intellectual backgrounds). A proseminar (English 179-80) assists students in the American literature option to prepare for the major examination.

A detailed description of the major (both options) is available in the Office of the Dean of Columbian College of Arts and Sciences.

Master of Arts in the field of American Literature.—Prerequisite: the degree of Bachelor of Arts with an undergraduate major in English, or twenty-four semester hours in English and/or American literature above the sophomore level.

Required: the general requirements, pages 89–95, including: (1) twenty-four semester hours of course work, planned in consultation with the adviser on the basis of the student's undergraduate preparation, including a minimum of six semester hours in English literature; (2) a Master's thesis (six semester hours) written upon an approved topic under the direction of the instructor in whose field the major portion of the material falls; (3) a written Master's Comprehensive Examination.

Master of Arts in the field of English Literature.—Prerequisite: the degree of Bachelor of Arts with an undergraduate major in Literature at this University, or twenty-four semester hours in English and/or American literature above the sophomore level. The student who has not passed the major examination in Literature at this University must take a candidacy examination which, in its scope and difficulty, is comparable to the major examination in Literature.

Required: the general requirements, pages 89–95, including: (1) twenty-four semester hours of course work, planned in consultation with the adviser; (2) a Master's thesis (six semester hours) written upon an approved topic under the direction of the instructor in whose field the material falls; and (3) a written Master's Comprehensive Examination.

Doctor of Philosophy field of study in American Literature: American Fiction.—See pages 89–93, 95–97, for requirements for the degree.

Doctor of Philosophy fields of study in English Literature: English Drama (16th Century, 17th Century, 20th Century), History of English Drama, and English Literature (17th Century, 18th Century, 20th Century).—See pages 89–93, 95–97, for requirements for the degree.

Bachelor of Arts with a major in American Civilization (Field-of-Study).—See page 183.

Bachelor of Arts in Education with a teaching field in English.—Prerequisite: the Education curriculum, page 78.

Required: the English option and the professional courses listed on pages 107, 114.

Master of Arts in the field of American Civilization.—See page 184.

Master of Arts in the field of Linguistics.—See pages 303–5.

Doctor of Philosophy field of study in American Civilization.—See page 184.

Students whose College Board English Composition Achievement Test scores suggest inadequate preparation may be assigned to English 1x or may be tested in vocabulary, spelling, grammar, standard usage, and writing skill, before placement in either English 1x or 1. Students whose scores indicate marked superiority will be allowed to waive the English 1 requirement.

All students enrolled in curricula leading to Bachelor's degrees in Columbian College (who are required to take one year of English composition and one year of literature in English, Classics, French, German, Italian, Slavic, or Spanish) will follow the sequence of English 1 or 1x, both semesters of one of the introductory literature courses, and English 40.

English 2 is the second half of the six-hour composition requirement of students not required to follow the Columbian College of Arts and Sciences sequence.

Departmental prerequisite: English 1 or 1x is prerequisite to all other courses in English. One of the following six-hour courses—English 51–52, 71–72, or 91–92; Classics 71–72; French 51–52; German 51–52; Italian 51–52; Slavic 91–92; or Spanish 51–52—is prerequisite to all second-group courses in English except English 125 and English 171–72.

ENGLISH COMPOSITION

FIRST GROUP

A English for Foreign Students (3)

Wright and Staff

Reading and writing to assist the foreign student in overcoming deficiencies in the use of English. Special attention to spelling, syntax, grammar, idiom, and vocabulary. (Fall and spring—evening; summer 1969)

B English for Foreign Students (3)

Wright and Staff

For second-semester foreign students not ready for English 1. Writing of expository paragraphs and themes; outlining; reading for comprehension, vocabulary, and style. (Fall and spring—evening; summer 1969)

1 English Composition (3)

Moore and Staff

Analysis and practice of expository techniques with emphasis on unity, development, and organization; library research procedure. (Fall and spring—day and evening; summer 1969)

1x English Composition (3)

Moore and Staff

Intensive course in English grammar and composition for students inadequately prepared for English 1. Begins with detailed instruction, drill, and exercises in basic structure of the English language and in writing paragraphs; continues with content of English 1. English 1x meets five hours a week and carries 3 semester hours of credit. Total fee, \$217 (tuition fee of \$192 plus additional fee of \$25). (Fall—day and evening; spring—evening)

2 English Composition (3)

Moore and Staff

For second-semester freshmen not following Columbian College sequence. Readings and practice in expository and argumentative techniques; research practice. Credit not given to students with credit for English 40 or former 4. Prerequisite: English 1 or 1x. (Fall and spring—day and evening; summer 1969)

40 English Composition (3)

Moore and Staff

Second half of the 6-hour English Composition course required of Columbian College students. Critical analysis and practice in expository and argumentative techniques; research practice. Credit not given to students with credit for English 2. Prerequisite: English 1 or 1x and both semesters of one of the introductory literature courses. (Fall and spring—day and evening; summer 1969)

SECOND GROUP

109 Expository Writing (3)

McClanahan, Moore

Types of expository writing; weekly exercises based on students' needs; particular attention may be given to problems in the writing of graduate theses. Prerequisite: English 1 or 1x; 2 or 40. (Fall—day)

113 Narrative Writing (3)

Claeysens, Schaefer

Techniques of narrative writing; class criticism of student writing. Prerequisite: English 1 or 1x; 2 or 40; consent of instructor. To obtain the instructor's consent a student should, before registration, submit samples of his writing. (Fall—day and evening; spring—day)

- 114 The Writing of Fiction—the Short Story (3)** Claeysens, Schaefer
Prerequisite: English 113, consent of instructor. To obtain the instructor's consent a student should, before registration, submit a sample of his writing. (Fall—day; spring—evening)

- 115-16 The Writing of Plays (3-3)** Schaefer
Admission by permission of instructor. To obtain the instructor's permission a student should, before registration, submit a sample of his writing. (Not offered 1969-70)

- 118 The Writing of Fiction—the Novel (3)** Claeysens
Prerequisite: English 113 or 114, consent of instructor. To obtain the instructor's consent a student should, before registration, submit a sample of his writing. (Spring—evening)

- 120 The Writing of Poetry (3)** Schaefer
Admission by permission of instructor. To obtain the instructor's permission a student should, before registration, submit a sample of his writing. (Spring—evening)

ENGLISH LITERATURE

FIRST GROUP

- 51-52 Introduction to English Literature (3-3)** Dunham and Staff
Historical survey. Prerequisite: English 1 or 1x. (First half: fall—day and evening; spring—day; summer 1969. Second half: fall—day; spring—day and evening; summer 1969.)

- 91-92 Introduction to European Literature (3-3)** Crane and Staff
Consideration of various types. Prerequisite: English 1 or 1x. (First half and second half: fall and spring—day)

SECOND GROUP

- 121 Medieval English Literature—Exclusive of Chaucer (3)** Allee
(Summer 1969)

- 122 Chaucer (3)** Allee
(Spring—evening)

- 125 Introduction to English Linguistics (3)** Allee
Development of the English language in a historical treatment of English grammar. (Fall—evening)

- 127-28 English Poetry: Form and Content (3-3)** Weismiller
First half: medieval period through the 18th century. Second half: 19th and 20th centuries. (Academic year—day)

- 129 Elizabethan Nondramatic Literature (3)** Quitslund
Nondramatic literature from 1485 to 1601. (Fall—evening)

- 135-36 Shakespeare (3-3)** Highfill
(Academic year—day and evening; summer 1969)

- 139-40 **The 17th Century (3-3)** Reesing
First half: poetry and prose from 1603 to 1660. *Second half:* Milton.
 (Academic year—day)
- 141-42 **English Literature, 1660-1780 (3-3)** Highfill
 Poetry and prose of the Neoclassic period. *First half:* 1660-1740. *Second half:* 1740-1780. (Not offered 1969-70)
- 151 **The Romantic Movement (3)** Sabin
 Poetry and prose, 1780-1830. (Fall—day)
- 162 **Victorian Literature (3)** Claiborne
 Poetry and prose, 1830-1900. (Spring—day; summer 1969—offered as English 161, 1830-1858 (3), and English 162, 1859-1900 (3))
- 165-66 **The 20th Century (3-3)** Linton
 British poetry, prose, and drama since 1900. (Academic year—day; summer 1969—English 165)
- 181-82 **The English Novel (3-3)** Coberly
 Major novelists, 18th and 19th centuries. (Not offered 1969-70)
- 183-84 **The English Drama (3-3)** Highfill, Crane
First half: principally the drama of Shakespeare's contemporaries. *Second half:* historical survey, 1660 to present. (Academic year—day)
- 192 **Medieval Legend and Saga (3)** Allee
 Celtic and Norse. (Not offered 1969-70)
- 199-200 **Proseminar in Literature (3-3)** Crane and Staff
 For Literature majors in the English literature option. Readings, conferences, and group discussions. (Not offered 1969-70)
- THIRD GROUP**
- 222 **Studies in Chaucer (3)** Allee
 (Not offered 1969-70)
- 223-24 **Old English (3-3)** Allee
 English language and literature before 1100. *First half:* Old English grammar and readings. *Second half:* *Beowulf*. (Not offered 1969-70)
- 227 **English Poetry: the Formal Development (3)** Weismiller
 (Fall—evening)
- 229-30 **Studies in Elizabethan Nondramatic Literature (3-3)** Quitslund
 (*First half:* not offered 1969-70. *Second half:* spring—evening.)
- 235-36 **Studies in Shakespeare and His Contemporaries (3-3)** Crane
 (*First half:* fall—evening. *Second half:* not offered 1969-70.)
- 239-40 **Studies in 17th Century Literature (3-3)** Reesing
First half: chief figures exclusive of Milton. *Second half:* Milton.
 (Not offered 1969-70)
- 241-42 **Studies in English Literature, 1660-1780 (3-3)** Highfill
 (Academic year—day)

266 COURSES OF INSTRUCTION

- 251-52 **Studies in the Romantic Movement (3-3)** Sabin
(First half: not offered 1969-70. Second half: spring—evening.)
- 261-62 **Studies in Victorian Literature (3-3)**
(Not offered 1969-70)
- 265-66 **Studies in 20th Century Literature (3-3)** Linton
Eliot and his contemporaries. (Not offered 1969-70)
- 279 **Research Methods and Bibliographical Materials (3)** Broderick
To acquaint graduate students with the principal sources of bibliography and the typical problems in research. (Fall—evening)
- 283-84 **Studies in Dramatic and Theatrical History (3-3)** Highfill
(Not offered 1969-70)
- 291 **Studies in Comic Literature (3)** Crane
(Not offered 1969-70)
- 292 **Studies in Modern Dramatic Literature (3)** Crane
(Not offered 1969-70)
- 293-94 **Seminar: the English Novel (3-3)** Coberly
(Not offered 1969-70)
- 295-96 **Studies in the History of English Literary Criticism (3-3)**
(Not offered 1969-70)
- 299-300 **Thesis Research (3-3)** Staff

FOURTH GROUP

- 398 **Advanced Reading and Research (arr.)** Staff
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged)
- 399 **Dissertation Research (arr.)** Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged)

AMERICAN LITERATURE

FIRST GROUP

- 71-72 **Introduction to American Literature (3-3)** Cole and Staff
Historical survey. First half: from beginnings to the Civil War. Second half: from the Civil War to present. Prerequisite: English 1 or 1A. (First half and second half: fall and spring—day and evening; summer 1969)

SECOND GROUP

164 American Poetry since World War II (3)

A study of poets such as Roethke, Lowell, and Wilbur who came into prominence after 1939, and of other younger poets of the fifties and sixties. (Summer 1969)

170 The American Short Story (3)

Coberly

Historical development of the short story in America. (Summer 1969)

171-72 Studies in American Literature (3-3)

McCandlish

Same as American Civilization 171-72. Major factors in the national cultural tradition as shown by outstanding writers. Prerequisite: English 51-52 or 71-72. (Academic year—day and evening)

173-74 Major American Poets (3-3)

Ganz

Advanced critical study of significant writers and movements. *First half:* from beginnings through 19th century. *Second half:* the 20th century. (Academic year—day)

175-76 American Drama (3-3)

Cole

Historical and critical study of significant plays and forms. *First half:* from beginnings to 1930. *Second half:* since 1930. (Academic year—day; summer 1969—English 176)

177-78 The American Novel (3-3)

Coberly

Historical and critical study of significant novels. *First half:* from beginnings through 19th century. *Second half:* 20th century. (*First half:* fall—day. *Second half:* not offered 1969-70.)

179-180 Proseminar in Literature (3-3)

McCandlish, Ganz

For Literature majors in the American literature option. Readings, conferences, and group discussions. (Academic year—day and evening)

194 History as a Literary Art (3)

McCandlish

Literary study of some 19th century American historians. (Not offered 1969-70)

THIRD GROUP

270 Seminar: the American Short Story (3)

Coberly

(Fall—evening)

271 Seminar: American Literature, 1865-1900 (3)

McCandlish

(Formerly English 271-72 Seminar: American Thought (3-3))

Intensive study of works of Twain, Howells, Henry James, Norris, and Stephen Crane. (Spring—day)

273-74 Studies in American Poetry (3-3)

Ganz

(Not offered 1969-70)

277-78 Seminar: American Fiction (3-3)

Coberly

(*First half:* not offered 1969-70. *Second half:* summer 1969.)

279 Research Methods and Bibliographical Materials (3)

Broderick

To acquaint graduate students with the principal sources of bibliography and the typical problems in research. (Fall—evening)

280 **Studies in American Transcendentalism** (3)
(Spring—evening)

Broderick

285-86 **Seminar: American Colonial Literature** (3-3)

McCandlish

Same as American Civilization 285-86. (Not offered 1969-70)

289-90 **Thesis Research** (3-3)

Staff

FOURTH GROUP

385-86 **Readings in American Colonial Literature** (3-3)

McCandlish

Same as American Civilization 385-86. For doctoral candidates.
(Not offered 1969-70)

387-88 **Readings in American Fiction** (3-3)

Coberly

Literature and the critical materials for which graduate students are responsible on the Doctor of Philosophy general examination.
(First half: fall—evening. Second half: not offered 1969-70.)

398 **Advanced Reading and Research** (arr.)

Staff

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged)

399 **Dissertation Research** (arr.)

Staff

Limited to Doctor of Philosophy candidates. May be repeated for credit.
(Fall and spring—as arranged)

Epidemiology and Environmental Health

Professors J.W. Millar (Chairman), J.A. Halsted (International Health)

Clinical Professor Murray Grant (Community Health)

Professorial Lecturer Daniel Finucane

Associate Professors C.R. Hartman, G.L. Harper

Associate Clinical Professors David Frost, G.O. Pierce, Lewis Robbins, W.J. Zukel

Assistant Professor M.E. Landay

Assistant Clinical Professors Lawrence Pyle, Jr., John Vinyard, Jr., E.N. Kassira

Assistant Professorial Lecturers S.H. Barboo, Jr., C.H. Miller, N.E. Manos

Doctor of Philosophy field of study in Human Ecology.—See pages 89-93, 95-97, for requirements for the degree.

201 **Introduction to Epidemiology and Environmental Health** (2)

Millar and Staff

Required for medical students; open to qualified graduate students. Principles and methodology of epidemiology and biostatistics. Ecological approach to health and disease, including parasitology and mycology.
(Spring—day)

217 **Advanced Mycology** (4)

Landay

Lecture (2 hours), laboratory (4 hours). Advanced study of fungi. Pre-requisite: Microbiology 211 or equivalent. Laboratory fee, \$16.
(Fall—day)

- 218 Advanced Parasitology (2)** **Millar**
Study of host-parasite relationships, including laboratory procedures. Limited to 2 qualified graduate students. (Fall—day)
- 230 Biostatistics (2)** **Staff**
(Formerly Statistics)
Application of statistical methods to health-related problems. Prerequisite: elementary college algebra. (Spring—day)
- 295 Research in Epidemiology (arr.)** **Staff**
Participation in experimental studies in infectious diseases and research in community medicine. (Fall and spring—as arranged)
- 301 Epidemiology and Environmental Health (1)** **Staff**
Lectures and seminars. Emphasis on means of organizing community to provide epidemiological solutions to health problems, developing an awareness of health resources and significant socioeconomic considerations in bringing total health to the community, showing importance of health as related to individual citizens. World health problems. Prerequisite: Microbiology 211, 212; or equivalent. (Spring—day)
- 351 Global Epidemiology (1)** **Staff**
Geographic pathology of disease and international aspects of disease prevention and control, including world demographic problems. (Fall—day)
- 352 Experimental Epidemiology (1)** **Staff**
Seminar. Student participation in definitions, design, and methods for developing epidemiologic studies of diseases. Coordinated so that protocol developed can be applied to field use. (Fall—day)
- 353 Military Preventive Medicine (1)** **Millar**
Operational medicine, environmental and sanitation problems, epidemiologic diseases of military importance and their prevention and control. Medical aspects of aerospace and submarine medicine. (Fall—day)
- 398 Advanced Reading and Research (arr.)** **Staff**
Limited to students preparing for Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)
- 399 Dissertation Research (arr.)** **Staff**
Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Geography and Regional Science

Associate Professors P.J. Mika, Marvin Gordon (Chairman)

Associate Professorial Lecturer Alice Andrews

Assistant Professors Subramaniam Moryadas, J.C. Lowe

Bachelor of Arts with a major in Geography (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, including Geography 51, 52; Geology 1; and an introductory course in Statistics.

Required: in addition to the general requirements, pages 81-85, twenty-seven semester hours of Geography beyond first-group courses, including Geography 103, 104, and 105: fifteen hours from Group A and three hours from Group B.

Group A: Geography 125, 126, 127, 132, 134, 141, 146. Group B: Geography 151, 153, 155, 161, 165, 166.

American Civilization 101 is recommended as a senior-year elective for Geography majors.

Master of Arts in the field of Geography.—Prerequisite: a Bachelor of Arts degree with a major in Geography from this University, or equivalent.

Required: the general requirements, pages 89-95, including Geography 205, 206, 299-300.

Bachelor of Arts with a major in Latin American Studies with optional emphasis in Geography (Interdepartmental).—See page 301.

Bachelor of Arts in Education with a teaching field in Geography.—Prerequisite: the Education curriculum, page 78.

Required: the Geography option and the professional courses listed on pages 108, 114.

Master of Arts in the field of Latin American Studies with optional emphasis in Geography (Interdepartmental).—See pages 301-2.

Master of Arts in Education with a field in Classroom Teaching (specialization in Geography).—Prerequisite: a Bachelor's degree with sufficient concentration in Geography to permit successful pursuit of graduate study in the Department of Geography and Regional Science. Candidates must be accepted by both the School of Education and the Department of Geography and Regional Science.

Required: the general requirements, pages 116-19, including fifteen semester hours of graduate study in Geography.

FIRST GROUP

51 Introduction to Geography (3)

Interrelated processes affecting the character of landforms, hydrography, soils, vegetation, and climate; relevance of their world patterns to man. (Fall and spring—day; summer 1969)

Staff

52 World Regions (3)

Survey of major countries, synthesis and analysis of major world regions. (Fall and spring—day; summer 1969)

Staff

SECOND GROUP

Geography and Regional Science 151, 153, 155, 161, 165, and 166 are regional survey courses and provide an introduction to more detailed study of geographic regions. Characteristics, interrelationships, and areal distributions of natural and cultural phenomena are considered. Strongly recommended for students interested in the study of specific areas are the regional courses offered by the departments of Economics, History, and Political Science.

103 Cartography and Graphics (3)

(Geography and Regional Science 103 and 104 replace former 103-4 Cartography (4-4))

Principles of cartography; emphasis on problems of presenting spatial data. Laboratory fee, \$11. (Fall—day)

Low

- 104 **Quantitative Cartography** (3) Lowe
(Geography and Regional Science 103 and 104 replace former 103-4 Cartography (4-4))
 Application of selected descriptive and statistical techniques to the solution of spatial problems. Laboratory fee, \$11. (Spring—day)
- 105 **Weather and Climate** (3) Mika
 Climatic elements and their controls, analysis of world climatic patterns. (Fall—day)
- 125 **Transportation Geography** (3) Lowe
(Formerly Transportation Complexes)
 Problems of interaction, diffusion, and information transfer as they appear in a spatial context. (1970-71 and alternate years: spring—day; summer 1969)
- 126 **World Economic Geography** (3) Moryadas
 World patterns and processes underlying the areal structure of selected economic activities. (Fall—day)
- 127 **World Population and Settlement** (3) Gordon
 Patterns of world population; factors contributing to population pressures, growth, and migrations. (Not offered 1969-70)
- 132 **Natural Resources** (3) Mika
 Implications for society of the areal variations in natural resources and methods of resource use. (Spring—day)
- 134 **Location of Industry** (3) Moryadas
 Structure of major world industries, location theory and locational requirements. (Spring—day)
- 141 **Urban Settlement** (3) Lowe
 Location, functions, and forms of cities; urban-rural relationships; urban problems and the history of their development. (Fall—day)
- 146 **World Political Geography** (3) Gordon
 Types and distributions of political systems, the major political units and associations of the world, factors which affect relative political power, areas of conflict and arbitration. (Fall—day)
- 151 **United States and Canada** (3) Moryadas
 (Fall—day; summer 1969)
- 153 **Europe** (3) Staff
 (Not offered 1969-70)
- 155 **Africa** (3) Staff
 (Not offered 1969-70)
- 161 **Latin America** (3) Gordon
 (Spring—day)
- 165 **Asia** (3) Moryadas
 (Spring—day)

272 COURSES OF INSTRUCTION

166 Soviet Union (3)

(Not offered 1969-70)

Staff

189-90 Readings in Geography (arr.)

(Academic year—as arranged; summer 1969)

Staff

THIRD GROUP

201 Seminar: History and Philosophy of Geography (3)

Low

Study of the development of geographic thought; an attempt to develop a useful, contemporary philosophy of geography. (1969-70 and alternate years: spring—evening)

205 Introduction to Regional Science I (3)

Moryadas

The regional concept and techniques of regionalization, the distance factor in human interaction, measurement of location. (Fall—evening)

206 Introduction to Regional Science II (3)

Moryadas

Location theory—agricultural, industrial, urban; statistical methods of testing theory; sources and problems of areal data. Prerequisite: Geography 205 or consent of instructor. (Spring—evening)

210 Seminar: Applied Economic Geography (3)

Problems in analyzing area and site development potential; evaluating alternative locational possibilities for manufacturing, commercial, and service facilities. (Summer 1969)

221 Techniques of Resource Inventory (3)

Methods used to measure and evaluate natural resource potential, case studies and development of inventory technology. (Not offered 1969-70)

223 Seminar: Population Geography (3)

Gordon

(Formerly Human Resources and Regional Development)

Analysis of the spatial variations of population characteristics and their environmental interrelationships. (Fall—evening)

243 Urban Geography (3)

Low

Functional processes affecting the morphology, evolution, and areal arrangement of urban phenomena. (Spring—evening)

244 City Region (3)

Low

Town-country interrelationships, functional character and spatial structure of the urban sphere of influence. (Fall—evening)

265 Seminar: Geography of the Soviet Union (3)

Baclawski

Physical features, economic geography, natural and energy resources, industries. Soviet transportation system, agriculture, multinational population trends; emphasis on population patterns along borderlands, especially Sino-Soviet border. (Fall—evening)

266 Seminar: Geography of China (3)

True

Physical and economic geography; emerging industries, energy resources, transportation system. Emphasis on population "explosion"—its distribution and significance—and on regional geography, particularly on the Sino-Soviet border, Manchuria, Tibet, Mongolia, Inner Mongolia, and Sinkiang. (Spring—evening)

287 Seminar: Problems in Latin American Civilization (3) Rodríguez
Interdisciplinary seminar guided by a specialist within the methodology of his chosen discipline; each student writes a report on some aspect of a key theme (i.e., Nationalism) in Latin America's experience. Admission by permission of instructor. (Spring—day)

295 Research (arr.) Staff
May be repeated once for credit. (Fall and spring—as arranged; summer 1969)

299–300 Thesis Research (3–3) Staff
(Academic year—as arranged; summer 1969)

Geology

Professors Geza Teleki (*Chairman*), G.V. Carroll, Charles Milton (*Research*), F.R. Siegel, W.A. Oliver, Jr. (*Research*)
Adjunct Professors J.W. Pierce, E.G. Kauffman, I.G. Sohn
Professorial Lecturers Nicholas Hotton, Daniel Appleman, P.M. Kier, Norman Herz
Associate Professors L.B. Platt, A.G. Coates, R.C. Lindholm
Associate Professorial Lecturers W.E. Maloney, M.A. Buzas, J.E. Hazel, Isidore Zietz, W.G. Melson
Lecturers D.H. Massie, J.E. Merida, Frederick Collier

Bachelor of Arts or Bachelor of Science with a major in Geology (Departmental).—Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 76. The following first-group courses must be included: Geology 1–2, 14; Chemistry 11–12; Physics 1, 2 or Biological Sciences 11–12; Mathematics 21 or 31 (for the degree of Bachelor of Arts), Mathematics 22 or 32, or Statistics 91 (for the degree of Bachelor of Science).

Required: in addition to the general requirements, pages 81–85, twenty-four semester hours in Geology beyond first-group courses for the Bachelor of Arts degree; thirty, for the Bachelor of Science degree. The work of the junior and senior years must be approved by the Department. Two foreign languages are recommended for students planning to do graduate work. Philosophy 121 and 151 are recommended as senior-year electives.

Master of Arts or Master of Science in the field of Geology.—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Geology from this University, or equivalent.

Required: the general requirements, pages 89–95, including Mathematics 22 or 32, or Statistics 91, or equivalent, for the degree of Master of Science only. Candidates must pass the Master's Comprehensive Examination before registration for the second half of the thesis work. A reading knowledge examination in French, German, Russian, or Spanish (with permission of Department) must be passed before the second half of the work is started.

Master of Science in the field of Geochemistry (an interdepartmental degree offered by the departments of Geology and Chemistry).—Prerequisite: a Bachelor's degree with a major in Geology or in Chemistry from this University, or equivalent.

Required: the general requirements, pages 89–95, including Chemistry 111, 112; Geology 141, 241, 249, and Geology 245 or Chemistry 213. The Master's Comprehensive Examination must be taken before registration for the second half of the thesis work. A reading knowledge examination in a foreign language, approved by the Department of Geology or Chemistry, must be passed before the second half of the work is started.

Doctor of Philosophy fields of study in Geology: Geomorphology, Mineralogy, Paleontology, Petrology, Sedimentology, Stratigraphy, and Structural Geology.—See pages 89–93, 95–97, for requirements for the degree.

Doctor of Philosophy field of study in Geochemistry (an interdepartmental field offered by the departments of Geology and Chemistry).—See pages 89–93, 95–97, for requirements for the degree.

Bachelor of Arts in Education with a teaching field in Earth Science.—Prerequisite: the Education curriculum, page 78.

Required: the Earth Science option and the professional courses listed on pages 106, 114.

FIRST GROUP

1–2 Introductory Geology (3–3)

Staff

Lecture (2 hours), laboratory (2 hours), field trips as arranged. Survey covering the principles of geology. Laboratory fee, \$10 a semester. (First half: fall—day; spring—evening; summer 1969. Second half: fall—evening; spring—day; summer 1969.)

14 General Petrology (3)

Carroll

Lecture (2 hours), laboratory (3 hours). Macroscopic study of rocks. Prerequisite: Geology 1–2 (concurrent registration for Geology 2 is accepted). Laboratory fee, \$10. (Fall—day)

91 Laboratory Techniques I (2)

Massie

Introduction to photographic procedures and techniques. Laboratory fee, \$15. (Fall—Saturday)

92 Laboratory Techniques II (2)

Collier

Introduction to laboratory machinery and techniques, preparation of thin sections, grinding and polishing techniques, fossil preparation, organization and handling of collections. Laboratory fee, \$15. (Spring—Saturday morning)

SECOND GROUP

101 History of Geological Sciences (3)

Teleki

Development of geological and scientific thought; history of geological and related sciences. (1969–70 and alternate years: fall—day)

103 Development of Scientific Thought (3)

(Summer 1969)

111–12 Mineralogy (4–4)

Carroll

Lecture (2 hours), laboratory (4 hours). First half: morphological and optical crystallography. Second half: paragenetic and systematic mineralogy. Admission by permission of instructor. Laboratory fee, \$12 a semester. (Academic year—day)

113 Crystallography (3)

Appelman

Lecture (2 hours), laboratory (3 hours). Point-group and space-group theory, fundamentals of crystal structure, elementary X-ray diffraction theory, application of X-ray diffraction to mineral identification. Prerequisite: Mathematics 22 or 32. Laboratory fee, \$15. (1969–70 and alternate years: fall—day)

115 Petrography (4) Carroll

Lecture (2 hours), laboratory (5 hours). Study of rocks by use of the polarizing microscope. Prerequisite: Chemistry 11-12, Geology 111-12. Laboratory fee, \$12. (Spring—day)

116 Sedimentary Petrography (4) Lindholm

Lecture (2 hours), laboratory (4 hours). Identification, classification, and interpretation of common sedimentary rocks by means of the petrographic microscope. Prerequisite: Geology 112, 163; or permission of instructor. Laboratory fee, \$12. (Spring—day)

122 Structural Geology (3) Platt

Lecture (2 hours), laboratory (2 hours), field trips as arranged. Genetic interpretation of geologic formations on basis of their structures, with emphasis on applications to geologic field work. Prerequisite: Geology 1-2. Laboratory fee, \$5. (Fall—day)

125 Marine Geology (3) Pierce

Lecture and map work. Principles of oceanography and submarine geology; geology of the deep sea; topography, crustal structure, sedimentary processes, and marine environment. Prerequisite: Geology 1-2. (Spring—evening)

128 Geomorphology (4) Teleki

Lecture (2 hours), laboratory (2 hours), field trips as arranged. Nature and evolution of earth forms, interpretation of maps and aerial photographs. Prerequisite: Geology 1-2, 101; or permission of instructor. (1970-71 and alternate years)

132 Economic Geology (3) Herz

Principles and processes of formation of mineral deposits. Modes of occurrence, origin, distribution, and utilization of metalliferous and nonmetalliferous deposits. (Spring—evening)

141 Introductory Geochemistry (3) Siegel

Lecture (2 hours), laboratory as arranged. Principles and theories on the abundance, relationships, and distribution of the elements in various rock and mineral species. Prerequisite: Geology 115 or equivalent; Chemistry 11-12; Mathematics 21 or 31; Physics 1, 2. Laboratory fee, \$12. (Fall—day)

151-52 Invertebrate Paleontology (3-3) Coates

Lecture and laboratory (5 hours), field trips as arranged. A systematic treatment of the invertebrate fossil groups, emphasis on the macroinvertebrates. The evolution and paleoecology of the groups will be introduced. Prerequisite: Geology 1-2. Laboratory fee, \$12 a semester. (Academic year—day)

154 Vertebrate Paleontology (3) Hotton

Lecture (2 hours), laboratory or field as arranged. General features of vertebrate morphology and evolution as illustrated by the fossil record; problems of paleoecology and adaptation, where appropriate. (Fall—evening)

- 155 Paleobotany (3)** Staff
Lecture (2 hours), laboratory or field as arranged. General features of fossil plant morphology, evolution, and classification. Laboratory fee, \$12. (1969-70 and alternate years: fall—evening)
- 157 Methods in Paleontology (3)** Sohn
Introduction to principles and techniques of paleontological research, including rules of zoological nomenclature. Prerequisite: Geology 151-52. (1969-70 and alternate years: spring—evening)
- 158-59 Micropaleontology (3-3)** Sohn and Staff
Lecture and laboratory (5 hours). Classification, evolution, and paleoecology of the important microfossil groups with special reference to Foraminifera and Ostracoda, including conodonts, radiolaria, diatoms, and coccoliths. Prerequisite: Geology 151-52 or permission of instructor. Laboratory fee, \$12 a semester. (1970-71 and alternate years)
- 163 Sedimentation (4)** Lindholm and Staff
Lecture (2 hours), laboratory (4 hours), field trips as arranged. Principles of sedimentation, analysis and interpretation of sedimentary processes and environment, laboratory experiments in the properties of sedimentary particles. Prerequisite: Geology 1. Laboratory fee, \$15. (Fall—day)
- 166 Principles of Stratigraphy (4)** Coates and Staff
Lecture (2 hours), laboratory (4 hours). Introduction to physical and biological stratigraphy. Prerequisite: Geology 151-52. (Fall—day)
- 172 Regional Geology (3)** Staff
Lecture, research, and discussion of major geologic or physiographic regions. Prerequisite: Geology 122. (Spring—day)
- 181 Oceanography I (3)** Maloney
Chemical and physical properties of sea water, movements of water masses, meteorological interrelations, ecology of marine plants and animals. Prerequisite: Mathematics 23 or 33, or equivalent, or permission of instructor. (1969-70 and alternate years: fall—day)
- 182 Oceanography II (3)** Maloney
Boundary processes and interactions between sea water and the atmosphere, principles of dynamics and their application to motion and distribution of variables, acoustics of water masses, review of recent literature and problems. Prerequisite: Geology 181. (1969-70 and alternate years: spring—day)
- 187 Geophysics for Geologists I (3)** Zietz
Basic geophysics to assist the geologist in detailed and regional mapping and in solving fundamental geologic problems. Emphasis on magnetic, gravimetric, and radioactive methods. Prerequisite: Mathematics 21 or 31; Physics 1, 2. (Spring—evening)
- 188 Geophysics for Geologists II (3)** Zietz
Basic geophysics to assist the geologist in mapping and in solving geologic problems. Emphasis on seismic, electric, and electromagnetic methods. Prerequisite: Mathematics 21 or 31; Physics 1, 2. (Fall—evening)

THIRD GROUP

- 205 **Seminar in Geology** (3) Staff
Special topics each semester. May be repeated for credit. (Fall and spring—as arranged)
- 212 **Crystal Chemistry** (3) Evans
(1969–70 and alternate years: spring—day)
- 214 **X-ray Mineralogy** (3) Appleman
Problems in X-ray mineralogy, crystal chemistry of rock forming minerals. Laboratory fee, \$15. (1970–71 and alternate years)
- 215 **Seminar: Crystallography and Mineralogy** (3) Staff
(1970–71 and alternate years)
- 219 **Petrogenesis** (3) Staff
The origin of selected igneous and metamorphic rock types. Prerequisite: Geology 115 and 141, or permission of instructor. (1969–70 and alternate years: spring—evening)
- 223 **Experimental and Theoretical Deformation** (3) Platt
Lectures and field trips as arranged. Experimental deformation of natural materials and theoretical analysis of the natural deformation of rocks. Prerequisite: Geology 122, Mathematics 22 or 32; or permission of instructor. (1970–71 and alternate years)
- 224 **Advanced Structural Geology** (3) Platt
Methods of study and the hypotheses of the genesis of structurally complex rock. Problems of orogeny. (Spring—day)
- 241 **Geochemistry** (3) Siegel
Chemical composition and physical properties of sea water, chemical composition and alterations of marine sediments, thermodynamics and biochemical activity in oceans. Methods of analysis and problems of measuring. Prerequisite: Mathematics 22 or 32, Physics 51–52. Chemistry 22 is recommended. Laboratory fee, \$18. (Spring—day)
- 242 **Experimental Geochemistry** (3) Siegel
Recent advances in geochemistry, instrumental methods and their application. Special topics. Does not repeat itself and can be repeated for credit. Prerequisite: Chemistry 111–12. (Spring—as arranged)
- 244 **Isotope Geology** (3)
Nuclear theory, isotopic variations due to radioactivity and fractionation, geochronometric measurements, and meteorites. Prerequisite: Geology 141 or permission of instructor. (Spring—evening)
- 245 **Thermodynamics for the Geologist** (3) Melson
Nature and definition of thermodynamics and the meaning of chemical equilibrium. Methods of graphical portrayal, significance and calculation in equilibrial relations and systems. Prerequisite: Mathematics 22 or 32. Mathematics 23 or 33 and Physics 51–52 are recommended. (1969–70 and alternate years: fall—evening)

- 246 Physical Chemistry in Relation to Geologic Problems (3)** Melson
 The origin of the atmosphere, equilibria in sea water, diagenesis, equilibrium in metamorphic rocks, composition and temperature-pressure relations in ore solutions, and the mechanism of ore formation; thermodynamics of magma. Prerequisite: Geology 245. (1969-70 and alternate years: spring—evening)
- 249 Seminar: Geochemistry (2)** Siegel
(Fall)
 Independent topics each semester; may be repeated for credit. and spring—as arranged)
- 253 Applied Paleontology (3)** Hazel and Staff
 Wide-ranging treatment of the use of fossils in several fields including biostratigraphy, paleobiogeography, paleotemperature; paleochemical analyses and the solving of particular geologic problems. Prerequisite: Geology 151-52. (1970-71 and alternate years)
- 254 Interpretive Paleontology (3)** Kauffman and Staff
 Comparative study of form and function in fossil and recent organisms as related to the interpretation of evolution. Prerequisite: Geology 151-52. (1970-71 and alternate years)
- 255 Population Paleoecology (3)** Buzas
 Characteristics of populations applicable to the fossil record. Subject matter includes ecosystem concept, habitat, Hutchinsonian niche, life-death, size frequency distributions, competitive exclusion principle, spatial distributions, relative abundance and diversity, quantification of community biofacies. Prerequisite: Geology 151-52, Statistics 91; or permission of instructor. (1969-70 and alternate years: spring—evening)
- 295 Research (arr.)** Staff
 Research on problems approved by the Staff. Open to qualified students with advanced training. May be repeated for credit. (Fall and spring—as arranged; summer 1969)
- 299-300 Thesis Research (3-3)** Staff
 (Academic year—as arranged; summer 1969)

FOURTH GROUP

- 398 Advanced Reading and Research (arr.)** Staff
 Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—day and evening; summer 1969)
- 399 Dissertation Research (arr.)** Staff
 Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Germanic Languages and Literatures

Professors W.K. Legner, J.C. King
Associate Professors Klaus Thoenelt, Carl Steiner, L.G. Seeger (*Chairman*)
Assistant Professorial Lecturer Lucie Kressley
Lecturer Blanche Gardner

Bachelor of Arts with a major in Germanic Languages and Literatures (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, including German 9-10 and 51-52.

Required: in addition to the general requirements, pages 81-85, a minimum of twenty-four semester hours in German courses above the first group, including German 179-80; reasonable proficiency in speaking and writing German. History 39-40 or equivalent; six semester hours in Philosophy selected with the approval of the adviser. Majors in German are strongly advised to study French.

Master of Arts in the field of Germanic Languages and Literatures—Prerequisite: a Bachelor of Arts degree with a major in Germanic Languages and Literatures from this University, or equivalent.

Required: the general requirements, pages 89-95, including a reading knowledge of French and a thesis in the field of German literature or linguistics.

Doctor of Philosophy fields of study in Germanic Languages and Literatures: Old High German Language and Literature, Old Norse Language and Literature, Middle High German Language and Literature, Early New High German Language and Literature, Classicism, Romanticism, Realism, 20th Century German Literature, and Linguistic Analysis.—See pages 89-93, 95-97, for requirements for the degree.

Bachelor of Arts in Education with a teaching field in German.—Prerequisite: the Education curriculum, page 78.

Required: the German option and the professional courses listed on pages 109, 114.

Master of Arts in the field of Linguistics.—See pages 303-5.

Placement Examination: A standardized placement examination given before registration is required of all entering students who wish to continue in college the language begun in high school. Upon completion of the examination, assignment is made to the appropriate course, with credit assigned on the usual basis.

FIRST GROUP

1-2 First-year German (3-3)

Staff

A year course: credit toward a degree at this University given on completion of German 2. Essentials of German grammar; translation of easy prose. Three classroom periods a week plus one period of aural-oral practice in language laboratory. Laboratory fee, \$17.50 a semester. (First half: fall—day and evening; spring—day; summer 1969. Second half: fall—day; spring—day and evening; summer 1969.)

*3-4 Second-year German (3-3)

Staff

A year course: credit toward a degree at this University given on completion of German 4. Selections from modern German prose; continuation and review of grammar. Three classroom periods a week plus one period of aural-oral practice in language laboratory. Laboratory fee, \$17.50 a semester. Prerequisite: German 1-2 or two years of high school German. (First half: fall—day and evening; spring—day; summer 1969. Second half: fall—day; spring—day and evening; summer 1969.)

*9-10 German Conversation and Composition (3-3)

Steiner

(Academic year—day)

47 Beginning German for Reading Examination Candidates (0)

Staff

Specifically for graduate students with little or no German, who are preparing for reading examinations. No academic credit. Tuition fee, \$192. (Fall and spring—evening; summer 1969)

*With permission of instructor, German 9-10 or 51-52 may be taken concurrently with German 4

49 German Readings for Nonmajor Students (3)

Staff

Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of instructor. No academic credit for graduate students. Prerequisite: German 4 or 47, or equivalent. (Fall and spring—evening; summer 1969)

***51-52 Introduction to German Literature (3-3)**

Legner, Seeger

Lecture, recitation, and discussion in English. Selected readings (primarily in translation) in German literature from the earliest periods to the present. (Academic year—day)

SECOND GROUP**103-4 Goethe's "Faust"—Parts I and II (3-3)**

Legner

(1969-70 and alternate years: academic year—day)

131-32 18th Century German Literature (3-3)

Thoenelt

Enlightenment, Storm and Stress, Classicism. (1969-70 and alternate years: academic year—day)

141-42 19th Century German Literature (3-3)

Steiner

Romanticism, Biedermeier, Young Germany, Realism. (1970-71 and alternate years: academic year—day)

151-52 20th Century German Literature (3-3)

Seeger

The age of Nietzsche, Naturalism, Expressionism, Kafka, Thomas Mann; contemporary drama; authors of Gruppe 47. (1970-71 and alternate years: academic year—evening)

161-62 Special Readings in German Literature for Majors (3-3)

Staff

Independent study only. (Not offered 1969-70)

179-80 Advanced Conversation and Composition (3-3)

Staff

For undergraduate and graduate majors. (Academic year—day)

THIRD GROUP**201-2 Middle High German (3-3)**

Legner

(1969-70 and alternate years: academic year—evening)

205-6 Gothic (3-3)

Legner

Introduction to the comparative study of Germanic languages. (Academic year—as arranged)

209-10 Old High German (3-3)

King

(1970-71 and alternate years: academic year—evening)

213-14 Old Norse (3-3)

Allee

(1969-70 and alternate years: academic year—evening)

223-24 Linguistic Analysis of Modern German (3-3)

King

Treatment of phonetics, phonemics, morphology, and syntax. (Not offered 1969-70)

*With permission of instructor, German 9-10 or 51-52 may be taken concurrently with German 4

- 225-26 **Seminar: Linguistics (3-3)** King, Allee
Bibliography, methodology, readings, and research problems. (Not offered 1969-70)
- 227-28 **Sanskrit—Introduction to Indo-European Linguistics (3-3)** King
Old Indic language and literature. (1969-70 and alternate years: academic year—evening)
- 229 **15th and 16th Century German Literature (3)** Legner
Transition from chivalric to bourgeois literature. The eras of Humanism and the Reformation as reflected in the principal literary works. (Not offered 1969-70)
- 230 **17th Century German Literature (3)** Legner
Imitation of foreign models. The literary societies. Preciosity. The beginnings of realism in the novel. Pietism. (Not offered 1969-70)
- 231-32 **German Classicism (3-3)** Thoenelt
Advanced study and critique of the classical literature of the Goethe era. Prerequisite: Germanic Languages and Literatures 131-32 or equivalent. (1970-71 and alternate years: academic year—evening)
- 241-42 **Seminar: German Romanticism (3-3)** Thoenelt
Treatment of individual writers, groups, motifs, and tendencies. (1969-70 and alternate years: academic year—evening)
- 251-52 **Seminar: Studies in 20th Century German Literature (3-3)** Seeger
Special projects in fiction, drama, poetry, and criticism. (1969-70 and alternate years: academic year—evening. Topic for 1969-70: *Expressionist Drama*)
- 271-72 **Seminar: German Literature (3-3)** Steiner
Bibliography, methodology, readings, and research problems. (1969-70 and alternate years: academic year—evening. Topic for 1969-70: *Realistic Drama, 1830-90*)
- 299-300 **Thesis Research (3-3)** Staff
Required of all candidates for the Master's degree in German. (Academic year—as arranged)

FOURTH GROUP

- 398 **Advanced Reading and Research (arr.)** Staff
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged)
- 399 **Dissertation Research (arr.)** Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged)

Greek

See "Classics."

Health Care Administration

Professors F.H. Gibbs, Leon Gintzig (*Chairman*)
Professorial Lecturers Clark Tibbitts, C.U. Letourneau, M.J. Taves
Associate Professor Lloyd Bartholomew
Associate Professorial Lecturers G.E. Morris, W.A. Parker
Assistant Professors R.A. Jydstrup, H.E. Green (*Research*)
Assistant Professorial Lecturer Marjorie Quandt
Instructor L.W. Katz

Master of Arts in Health Care Administration with a concentration in Hospital Administration, Administration of Long-term Care Facilities, Health Information Systems, or Comprehensive Health Planning.—See pages 136–39, 145–46.

Master of Business Administration or Master of Public Administration in the field of Health Care Administration with a concentration in Hospital Administration, Administration of Long-term Care Facilities, or Health Information Systems.—See pages 136–41, 142–43.

Graduate Certificate in Health Care Administration.—See page 146.

Doctor of Business Administration or Doctor of Public Administration in the field of Health Care Administration.—See pages 147–49.

SECOND GROUP

153–54 Survey of Health Care Organization and Procedures (3–3)

Primarily for students who wish an over-all knowledge of organization and procedures used in health care policies, hospitals, and long-term care facilities. Not open to Master's candidates in Health Care Administration (Academic year—evening)

THIRD GROUP

202 Introduction to Health Care Administration (3) Bartholomew, Parker

Lecture and discussion (2 hours), laboratory (2 hours). Survey of state, national, and community health services; includes medical terminology, communicable diseases, environmental sanitation, and biostatistics. (Fall—day and evening; spring—as arranged)

203 Organization and Management (3) Jydstrup

Lecture and discussion (2 hours), laboratory (2 hours). History and current character of institutional health care. Organizational functions and structure of various kinds of facilities related to health care administration. Prerequisite or concurrent registration: Business and Public Administration 201. (Fall and spring—as arranged)

204 Planning and Support Agencies and Associations (3) Staff

Functions performed and special support techniques of hospital, medical, public health, nursing home, planning, educational, and similar associations. (Not offered 1969–70)

205 Hospital Management Procedures (3) Bartholomew, Letourneau

Lecture and discussion (2 hours) laboratory (2 hours). Departmental administration. Survey of hospital law; hospital forms, procedures, and systems, and hospital programs pertaining to disaster relief, safety, fire prevention. (Fall—as arranged; spring—day)

- 206 Case Studies in Health Care Administration (3)** Gintzig, Gibbs
Discussion (2 hours), laboratory (2 hours). General ideas about administration applied to practical cases. Emphasis on policy making, planning, controlling, and organizing. Prerequisite: Business and Public Administration 201 and Health Care Administration 203. (Fall and spring—day)
- 207 Management Analysis in Health Care Institutions (3)** Gintzig
Lecture (2 hours), laboratory (2 hours). Basic investigation and problem-solving techniques, including various methods of collecting, analyzing, reporting, and using information that can be made available to administrators of hospitals and other medical care institutions. (Fall and spring—as arranged)
- 209 Health Care Economics and Financial Management (3)** Katz
Lecture (2 hours), laboratory (2 hours). Economic and financial analysis of the interactions between consumers of health care, providers of health care, and public and private prepayment and insurance programs. Industry price structure and the long- and short-term capital requirement of health care institutions. (Fall—day; spring—day and evening)
- 212 Planning and Constructing Health Care Facilities (3)** Jydstrup
Lecture (2 hours), laboratory (2 hours). Regional and specific aspects of long- and short-term health care planning, designing, constructing, purchasing, equipping, and supplying. Prerequisite: Health Care Administration 202 and 203. (Spring—as arranged)
- 213 Administration of Health Care Systems (3)** Gintzig
Comparative evaluation of various organizational patterns, functions, and trends in health care systems by intensive examination of factors which have led to differentiating functions and reciprocal relationships. Emphasis on the sources of such differences and significance of the systems to the health care of a nation. (Fall or spring—as arranged)
- 250 Administration for Mental Care (3)** Morris
Special characteristics of administration required in mental hospitals, psychiatric sections of general hospitals, mental health clinics, and others. (As arranged)
- 260 Administration for Long-term Care Facilities (3)** Green
Comparative evaluation of characteristics of long-term care institutions: variety of facilities (extended care, nursing homes, homes and housing for the aged, etc.); internal and external professional services essential to facilities; relation of purposes and functions of institutions to total health needs of community. (Fall—as arranged)
- 261 Business Procedures for Long-term Care Facilities (3)** Green
Research, analysis, and discussion of health facility organization and management. (Spring—as arranged)
- 265-66 Readings in Long-term Care Administration (3-3)** Staff
Advanced studies in selected aspects of administration of long-term care facilities, including nursing homes, homes for the aged, and others. (Fall or spring—as arranged)

- 267 **Social Gerontology for the Administrator** (3) Tibbitts, Taves
Special characteristics of the elderly with which administrators of long-term care facilities should be acquainted. (Fall and spring—as arranged)
- 270 **Research in Health Care Administration** (3) Bartholomew, Gintzig
Field research. Primarily for doctoral candidates; open to other graduate students with consent of instructor. (Fall or spring—as arranged; summer 1969)
- 285-86 **Readings in Health Care Administration** (3-3) Staff
Supervised readings in some special areas or subdivisions of health care administration. Primarily for doctoral candidates; open to other students by arrangement. (Academic year—as arranged; summer 1969—Health Care Administration 285)
- 287 **Seminar: Integration of Health Care Administration** (3) Staff
Primarily for doctoral candidates; open to other students by arrangement (Fall—as arranged)
- 288 **Seminar: Field Problem Studies in Health Care Administration** (3) Staff
Selected administrative issues and problems arising in health care facility situations. Primarily for doctoral students; open to other students by arrangement. (Fall or spring—as arranged)
- 293-94
-95 **Residency I** (3-3-3) Bartholomew, Katz, Gibbs, Gintzig, Green
Twelve-month residency, beginning each year June 1 or July 1. Work experience under a qualified preceptor, periodic written progress reports and a written major report.
- 296-97
-98 **Residency II** (3-3-3) Gintzig
For selected students who take a second twelve-month residency; begins June 1 or July 1 each year. Staff
- 299-300 **Thesis Research** (3-3)

FOURTH GROUP

- 398 **Advanced Reading and Research** (arr.) Gintzig, Bartholomew
Limited to doctoral students preparing for the general examination. May be repeated for credit. (Fall and spring—as arranged)
- 399 **Dissertation Research** (arr.) Gintzig, Bartholomew
Limited to doctoral candidates. May be repeated for credit. (Fall and spring—as arranged)

History

Professors Wood Gray, H.M. Merriman, R.H. Davison (Chairman), R.B. Thompson, F.H. Michael, R.C. Haskett, R.P. Sharkey, Mario Rodriguez, H.M. Sachar, J.S. Redding

Professorial Lecturer R.P. Multhaupt

Associate Professors C.J. Herber, R.W. Kenny, P.P. Hill, W.R. Johnson, Lois Schwoerer, Linda DePauw

Assistant Professors A.D. Andrews II, R.A. Hadley, Richard Thornton

Bachelor of Arts with a major in History (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 76, including History 39-40 or 91-92, and 71-72.

Required: the general requirements, pages 81-85, and the passing of the History major examination at the end of the senior year.

The major, and the major examination which attests it, is centered on the study of the Mediterranean rise, European development, and trans-Atlantic spread of Western Civilization, its interaction with other civilizations in a world context, and its continuing challenges to the present day. Under the guidance of an adviser the student will arrange his program in History to attain, insofar as possible, a balanced evaluation of (1) the rise of civilization in Europe from its Classical origins to the eve of the French Revolution; (2) the historic problems of modern Europe in the age of industry and ideology since 1789; (3) the political, social, economic, and cultural forces of the United States in their world setting since 1607; and (4) the nature and development of civilization in the principal areas outside of the North Atlantic community. A six-hour research seminar to give training in fundamental techniques is a required part of each major's program, and a proseminar (History 199-200) is offered as a means of integrating the student's understanding of the continuity of Western Civilization in its world context. For details relating to the administration and content of the major, see the pamphlet on this subject which is available in the offices of the Dean of Columbian College of Arts and Sciences and the Chairman of the Department of History.

An Honors Program was inaugurated in 1968. Application to this Program must be made shortly before completion of the first semester of the junior year. Students accepted into the Program take a three-hour research seminar in the second semester of the junior year and complete the research requirements for the history major by preparing the Senior Honors Thesis (History 191-92) in the final year of undergraduate study. A special section of the proseminar is offered for students in the Honors Program in the first semester of the senior year.

Master of Arts in the field of History.—Prerequisite: the degree of Bachelor of Arts with a major in History (high B average or better) from this University, or equivalent, and the approval of the Department. Applicants from other institutions must present scores on the Graduate Record Examination with the Advanced Test in History and arrange for four persons, preferably former instructors, to send letters of recommendation to the Office of the Graduate School of Arts and Sciences.

Required: the general requirements, pages 89-95. Of the twenty-four semester hours of required second- and third-group courses (exclusive of the thesis), at least six must be in third- or fourth-group History courses; a maximum of six may be in a closely related field outside the Department of History as approved by the Department. Master's candidates are responsible for arranging with instructors of second-group courses for extra work, in order to receive graduate credit for such courses.

Doctor of Philosophy fields of study in History.—The Department of History offers the following fields in which dissertations may be written and from which the five fields for the General Examination may be chosen: (1) American History (Colonial, Early National, Political, Diplomatic, Economic, Religious, Social, Negro), (2) European History (Classical Greek and Roman, Medieval, Early Modern, Modern, Economic, Diplomatic, English, French, German, Balkan, Iberian), (3) Russian History, (4) Latin American History (Colonial, National, Central American, Brazilian), (5) Asian History (Near Eastern, Modern Chinese, Modern Japanese), (6) Canadian History, (7) Jewish History, and (8) History of Science.—See pages 89-93, 95-97, for requirements for the degree.

Bachelor of Arts with a major in Latin American Studies with optional emphasis in History (Interdepartmental).—See page 301.

Bachelor of Arts in Education with a teaching field in History.—Prerequisite: the Education curriculum, page 78.

Required: the History option and the professional courses on pages 109–10, 114.

Master of Arts in the field of Latin American Studies with optional emphasis in History (Interdepartmental).—See pages 301–2.

Doctor of Philosophy fields of study in American Civilization.—See page 184.

Doctor of Philosophy fields of study in International Relations combine work in Economics, History, and Political Science.

Departmental prerequisite: History 39–40 or 91–92 is prerequisite to courses 108 through 158 and 187 through 196; History 71–72, to courses 167 through 185; either History 39–40, 71–72, or 91–92, to courses 162 through 166. Prerequisite to History 105–6 is either History 39–40, 91–92, or a background in a science.

FIRST GROUP

39–40 European Civilization in Its World Context (3–3)

Primarily for freshmen. *First half:* political, social, economic, and cultural history from ancient times to early modern era. *Second half:* from early modern era to present. Students cannot receive credit for both History 39–40 and 91–92. (Academic year—day and evening; summer 1969)

Staff

71–72 Introduction to American History (3–3)

(Formerly *Civilization of the United States*)

Primarily for sophomores. *First half:* political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865. *Second half:* from 1865 to present. (Academic year—day and evening; summer 1969)

Staff

91–92 World Civilizations (3–3)

First half: major civilizations of the world to 1500. *Second half:* European-centric and world civilization since 1500. Students cannot receive credit for both History 39–40 and 91–92. (Academic year—day)

Thompson

SECOND GROUP

105–6 History of Science (3–3)

First half: ancient natural philosophy and growth of special sciences through the 17th–18th century scientific revolution. *Second half:* scientific development from the mid-18th century to the scientific revolution of the early 20th century. Prerequisite: History 39–40 or a background in science. (Academic year—evening)

Multhauf

108 The Ancient Near East and Egypt to 600 A.D. (3)

Survey of Egyptian, Mesopotamian, Anatolian, West Semitic, and Iranian civilizations from the Neolithic period to the Islamic conquest. (Not offered 1969–70)

Hadley

109 Early Aegean and Greek Civilizations to 200 B.C. (3)

Neolithic background; Bronze age—Minoan, Helladic, and Mycenaean civilizations; classical Greek civilization to the eve of the Roman conquest. (Fall—day)

Hadley

- 110 The Roman World to 455 A.D. (3)** Hadley
Prehistoric Italy; rise and decline of the Roman Empire and Latin civilization; cultural, social, and political developments in the Greek world under Roman rule. (Spring—day)
- 111-12 Medieval History (3-3)** Andrews
Development of the Latin Christian community. *First half:* 4th to 10th century. *Second half:* 10th to 13th century. (Academic year—day)
- 113 Early Middle Ages (3)** Andrews
Mediterranean region from 4th to 11th century; emphasis on Byzantium. (Not offered 1969-70)
- 121 The Renaissance in Western Europe (3)** Schwoerer
Political, economic, intellectual, and cultural features of the Renaissance 14th-16th centuries. Focus on Italy, but with attention to developments in France and England. (Fall—day)
- 131-32 History of Germany (3-3)** Herber
Political, social, and cultural development. *First half:* from Reformation to 1871. *Second half:* from 1871 to present. (Not offered 1969-70)
- 138 History of World Communism (3)** Thornton
(Formerly *History of the Comintern*)
The international communist movement from its beginnings to the present. (Fall—day)
- 139-40 World History in the 20th Century (3-3)** Sachar
First half: from the turn of the century to the Munich settlement of 1938. *Second half:* from Munich to present. (*First half:* fall—day. *Second half:* not offered 1969-70.)
- 141-42 History of France (3-3)** Herber
Political, social, and cultural. *First half:* from earliest times to 1815. *Second half:* from 1815 to present. (Academic year—day)
- 145-46 History of Russia (3-3)** Thompson
Rise and revolution of Russia. *First half:* the Old Regime, 860-1900. *Second half:* Revolution and Soviet rule since 1900. (Academic year—day)
- 147 Economic History of Europe (3)** Sharkey
Economic development since the Middle Ages; emphasis on the period following the Industrial Revolution. Evolution of capitalism and its impact upon the societies of Europe. (Spring—day)
- 149-50 European Diplomatic History (3-3)** McDonald
The European state system; diplomatic practices and relations since the Congress of Vienna; emphasis on policies and actions of the great powers and their statesmen. *First half:* to 1890. *Second half:* since 1890. Students cannot receive credit for both History 150 and 157. (Academic year—day; summer 1969—History 150)

* As interdepartmental course offered by the departments of History and Economics

151-52 History of England and Great Britain (3-3)

Kenny

Development of English civilization and its impact on Western culture.
First half: to 1689. *Second half:* since 1689. (Academic year—day)

153 Tudor England (3)

Kenny

Aspects of the constitutional, social, intellectual, and religious development of England, 1485-1603. (Fall—day)

154 Stuart England (3)

Schwoerer

Main currents from 1603 to 1714; emphasis on political, religious, social, and intellectual developments. (Spring—day)

157 20th Century European Diplomatic History (3)

Sachar

The main currents, with necessary 19th century background. Students cannot receive credit for both History 157 and 150. (Fall—day)

158 Modern Jewish History (3)

Sachar

A secular history of the Jewish people from the 18th century to the present state of Israel, with particular emphasis on European political, economic, and cultural influences. (Not offered 1969-70)

162 History of Spain and Portugal (3)

Rodriguez

Political, social, and cultural aspects. (Not offered 1969-70)

163-64 History of Latin America (3-3)

Rodriguez

Political, social, and cultural development. *First half:* through independence. *Second half:* the national period. (Academic year—day)

165 History of Brazil (3)

Rodriguez

Political, social, and cultural aspects. (Fall—day)

166 History of Mexico (3)

Staff

Political, social, and cultural aspects. (Not offered 1969-70)

167 American Colonial History (3)

Haskett

Settlement of colonies, development of provincial institutions, and emergence of American civilization in the 17th and 18th centuries. (Spring—day)

169 The American Revolution (3)

DePaau

The crisis of the British Empire after the Seven Years War, the War for Independence, the Confederation period, the making and ratification of the Federal Constitution. (Fall—day)

170 U.S. Early National History (3)

Hill

Political, diplomatic, economic, and social history of the early republic, 1789-1840. (Spring—day)

171-72 U.S. Social History (3-3)

Gray

First half: daily life, institutions, intellectual and artistic achievements of the Agrarian Era, 1607-1861. *Second half:* the Urban-Industrial Era from 1861 to present. (Academic year—day)

173-74 The Negro in American History (3-3)

Redding

The role or story of Black Americans in the structure of American history. (Academic year—day)

- 175-76 U.S. Political History (3-3)** Haskett
First half: to the Civil War. Second half: Civil War to New Deal.
 (Academic year—day; summer 1969—History 175)
- 177 The Ante-bellum South (3)** DePauw
 Development of the South as a section in the ante-bellum period.
 (Spring—day)
- 178 The Civil War (3)**
 Causative factors leading to Civil War; social, political, military, economic, and diplomatic aspects of the War; immediate and long-range effects on American life. (Not offered 1969-70)
- 179-80 U.S. Economic History (3-3)** Sharkey
 Process of economic growth from Colonial times to the present. Development of various sectors in the economy—such as agriculture, transportation, manufacturing, and banking—and their interdependence. *First half: 1607-1865. Second half: from 1865 to present.* (Academic year—evening)
- 181-82 U.S. Diplomatic History (3-3)** Merriman, Hill
 Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; activities of American secretaries of state and diplomatic agents. *First half: to 1898. Second half: since 1898.* (Academic year—day; summer 1969—History 182)
- 183 Oversea Expansion of the United States (3)** Merriman
 Political, economic, social, and cultural life of our outlying possessions.
 (Spring—day)
- 184 Canada and the United States (3)** Merriman
 Historical background and main trends in the relationship of the two English-speaking peoples of North America. (Not offered 1969-70)
- 185 Representative Americans (3)** Gray
(Formerly History 173)
 Significant and pivotal personalities in government, business, science, religion, journalism, the arts, and social reform. (Fall—day; summer 1969)
- 187 History of Modern China (3)** Johnson
 China since 1840, particular attention to political developments. (Fall—evening; summer 1969)
- 188 History of Chinese Communism (3)** Thornton
 Survey of the leadership, ideology, structure, and operation of the Communist Party of China from its founding to the present. (Spring—day; summer 1969)
- 191-92 Senior Honors Thesis (3-3)** Staff
 Required of and open only to undergraduate honors candidates in history.
 (Academic year—as arranged)

193 History of the Near East (3)

Byzantine, Arab, Persian, and Islamic backgrounds; rise and decline of the Ottoman Empire; action of European powers in the area; Ottoman break-up into the Turkish Republic and other successor states. (Fall—day) **Davison**

194 History of the Modern Near East (3)

Beginning with Napoleon's invasion of Egypt. Interaction of Europe with western Asia, emphasis on such international issues as the Turkish Straits, Suez, Anglo-French imperialism; Turkish, Balkan, Arab, and Jewish nationalism, and the recent Soviet intrusion into the area. (Summer 1969) **Sachar**

195-96 History of East Asia (3-3)

Civilizations of China and Japan; emphasis on cultural development and social organization. *First half*: beginnings to about 1800. *Second half*: traditional societies on the eve of the modern era, their responses to Western cultural influences since mid-19th century. (Academic year—day) **Johnson**

199-200 Proseminar: Readings for the History Major (3-3)

Limited to senior history majors. Readings and discussions on major trends in the history of Western civilization in their world setting; representative selections from the classics of historical literature. Students cannot receive credit for both History 199-200 and 201-2. (Academic year—day and evening) **Staff**

THIRD GROUP

Prerequisite to all third-group History courses: the appropriate second-group preparation and consent of instructor.

201-2 History and Historians (3-3)

Students cannot receive credit for both History 201-2 and 199-200. (Academic year—as arranged) **Staff**

203-4 Research Seminar (3-3)

Prerequisite: Departmental approval. (Academic year—as arranged) **Staff**

205-6 Seminar: Modern History of Eastern Europe (3-3)

East Central and Southeastern Europe in the 19th and 20th centuries. *First half*: to the mid-1930's. *Second half*: to the communist take-over (1948). (Academic year—day) **Petrov**

207 Seminar: The Communist Party of the Soviet Union (3)

Evolution of the communist movement of the Soviet Union. Cominform, and other fundamentals of international communist organization. Selected case studies of individual congresses of the CPSU. (Spring—day) **Ploss**

208 Research Seminar: History of World Communism (3)
(Formerly Research Seminar: History of the Comintern)

History of international communism. (Not offered 1969-70) **Thornton**

209-10 Seminar: Ancient History (3-3)

Prerequisite: History 108, 109, and 110; or equivalent. year—day) **Hadley**
(Academic)

- 211-12 Seminar: Medieval History (3-3)** Andrews
Prerequisite: History 111-12 or equivalent. (Academic year—day)
- *231 Seminar: Sino-Soviet Relations (3)** Michael
Background, development, and status of conflict within the communist movement; emphasis on the role of Chinese communists. Prerequisite: 3 semester hours selected from History 187; Political Science 101, 194; or equivalent. (Spring—day)
- 237 Seminar: Soviet Foreign Policy, 1917-1953 (3)** Petrov
Revolutionary concept of diplomacy. Parallel instruments of foreign policy during the era of "capitalist encirclement," 1917-1939. From Nazi-Soviet partnership to the alliance with the West, 1939-1945. Foreign policies of the cold war, 1945-1953. (Fall—day)
- 241-42 Research Seminar: Modern European History (3-3)** Herber
Prerequisite: appropriate preparation and consent of instructor. (Academic year—day)
- 245-46 Research Seminar: Russia and Europe (3-3)** Thompson
Prerequisite: History 145-46 or equivalent. (First half: fall—day. Second half: not offered 1969-70.)
- 249-50 Research Seminar: European Diplomatic History (3-3)** Davison
Prerequisite: History 149 or 150, or equivalent. Reading knowledge of French or German required. (Not offered 1969-70)
- 251-52 Research Seminar: English History (3-3)** Schwoerer
Prerequisite: History 151-52 or equivalent. (Academic year—day)
- 261-62 Research Seminar: Latin American History (3-3)** Rodriguez
Prerequisite: 6 semester hours selected from History 162, 163-64, 165, 166. (Academic year—evening)
- 264 Research Seminar: Mexican History (3)** Staff
(Spring—day)
- 271-72 Research Seminar: U.S. Social History (3-3)** Gray
Prerequisite: History 171-72 or equivalent. (First half: not offered 1969-70. Second half: spring—day.)
- *273-74 Research Seminar: Materials in American Negro Culture (3-3)** Redding
Prerequisite: History 173-74 or equivalent. (Academic year—day)
- 275-76 Research Seminar: U.S. Political History (3-3)** Haskett
Prerequisite: History 175-76 or equivalent. (Academic year—day; summer 1969—History 275)
- 281-82 Research Seminar: U.S. Diplomatic History (3-3)** Merriman
Prerequisite: History 181-82 or equivalent. (First half: fall—day. Second half: spring—day.)

* Offered jointly by the departments of History and Political Science.

* Offered jointly by the Department of History and the American Studies Program.

292 COURSES OF INSTRUCTION

- 283-84 **Research Seminar: Recent U.S. History (3-3)** Hill
Prerequisite: History 181-82 or equivalent. (*First half: fall—day. Second half: not offered 1969-70.*)
- 285-86 **Research Seminar: U.S. Early National Period (3-3)** Hill
Prerequisite: History 170, 175, or 181; or equivalent. (Not offered 1969-70)
- 287 **Seminar: Problems in Latin American Civilization (3)** Rodriguez
Interdisciplinary seminar guided by a specialist within the methodology of his chosen discipline; each student writes a report on some aspect of a key theme (i.e., Nationalism) in Latin America's experience. Admission by permission of instructor. (Spring—day)
- 288 **Research Seminar: History of Chinese Communism (3)** Thornton
History of the relations between the Communist Party of China and the Comintern. (Spring—evening)
- 291 **Research Seminar: 20th Century Problems—Era of World War I (3)** Sachar
(Fall—day; summer 1969)
- 292 **Research Seminar: 20th Century Problems—Era of World War II (3)** Sachar
(Not offered 1969-70)
- 293-94 **Research Seminar: the Modern Near East (3-3)** Davison
Prerequisite: History 193 or equivalent. (Not offered 1969-70)
- 295-96 **Research Seminar: the Modern Far East (3-3)** Johnson
Prerequisite: History 195-96 or equivalent. (Academic year—day)
- 299-300 **Thesis Research (3-3)** Staff
Required of all Master's candidates in history. (Academic year—as arranged; summer 1969)

FOURTH GROUP

Prerequisite to all fourth-group History courses: the appropriate second-group preparation and consent of instructor.

Fourth-group History courses are limited to graduate students; but they are primarily for doctoral candidates.

- 311-12 **Readings in Medieval History (3-3)** Andrews
(*First half: not offered 1969-70. Second half: spring—as arranged.*)
- 341-42 **Readings in Modern European History (3-3)** Davison
(*First half: not offered 1969-70. Second half: spring—day.*)
- 345-46 **Readings in Russian History (3-3)** Thompson
(*First half: not offered 1969-70. Second half: spring—day.*)
- 351-52 **Readings in English History (3-3)** Kenny
(*First half: not offered 1969-70. Second half: spring—day.*)

- 361-62 **Readings in Latin American History** (3-3) Rodriguez
(Not offered 1969-70)
- 371-72 **Readings in American Social History** (3-3) Gray
(Academic year—day; summer 1969—History 372)
- *373-74 **Readings in American Negro Culture** (3-3) Redding
(Not offered 1969-70)
- 375-76 **Readings in U.S. Political History** (3-3) Haskett
(First half: not offered 1969-70. Second half: fall—day.)
- †379-80 **Readings in Economic History** (3-3) Sharkey
(Academic year—evening)
- 381-82 **Readings in American Diplomatic History** (3-3) Merriman
(First half: not offered 1969-70. Second half: fall—day.)
- 387-88 **Readings in the History of Sino-Soviet Relations** Thornton, Michael
(Academic year—evening; summer 1969—History 387)
- 395-96 **Readings in Modern Far Eastern History** (3-3) Johnson
(First half: not offered 1969-70. Second half: spring—day; summer 1969.)
- 398 **Advanced Reading and Research** (arr.) Staff
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged)
- 399 **Dissertation Research** (arr.) Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged)

Honors Program—Columbian College Lower Division

H.E. Yeide, Jr., *Director*

Limited to selected freshmen and sophomores (see pages 71-72).

FIRST GROUP

1 Seminar: the Great Ideas of the West (3)

Reading, discussion, and research involving works crucial to an understanding of the great Western ideas—their historical development and contemporary relevance. Examination of problems and categories that lie at the roots of most modern scholarly disciplines. (Spring—day)

* Offered jointly by the Department of History and the American Studies Program
† Interdepartmental course offered by the departments of History and Economics

21-22 Seminar: Contemporary Problems (3-3)

Reading, discussion, and research dealing with one major contemporary problem each semester, utilizing the perspectives and insights of various academic disciplines. (Academic year—day)

Institute for Sino-Soviet Studies

MEMBERS OF THE INSTITUTE

Kurt London (*Director*), F.H. Michael (*Associate Director*), Anita Dasbach, C.F. Elliott, Andrew Gyorgy, H.C. Hinton, W.R. Johnson, W.H. Kraus, Vladimir Petrov, Sidney Ploss, R.B. Thompson, Richard Thornton, R.K. White, R.Y.C. Yin

ASSOCIATE MEMBERS OF THE INSTITUTE

Joseph Baclawski, R.M. Field, Bernard Gordon, John Hardt, Tao-tai Hsia, Roman Kolkowicz, Lothar Metzl, Bernard Ramundo, Philip True

The Institute for Sino-Soviet Studies offers specialized graduate study in the School of Public and International Affairs. Students who lack background in Soviet and Chinese studies are required to take undergraduate courses selected by the adviser as prerequisite to graduate work.

For description of the objectives and programs of the Institute, see pages 163-65

ECONOMICS

267 Seminar: Soviet Economy (3)

Development of the Soviet-type economy. Organization, policies, and problems; monetary, fiscal, production, allocative, foreign trade, economic growth. Workshop: case studies on sectoral or problem areas. Prerequisite: graduate status; Economics 101, 102, 133, and 134, or equivalent; and permission of instructor. (Fall—evening)

268 Seminar: Economic Theory and Development in Communist Countries (3)

Appraisal of the Soviet-type model for economic development in the institutional framework of Soviet and other communist processes of economic development. Workshop: case studies on Eastern Europe, Chinese and other communist economies. Prerequisite: graduate status; Economics 101, 102, 133, and 134, or equivalent; and permission of instructor. (Spring—evening)

269 Economy of Communist China I (3)

Analysis of organization, operation, policies, and problems. Development of the economy under communism. (Fall—evening)

270 Economy of Communist China II (3)

Continuation of Economics 269, examining critical problems of development. Prerequisite: Economics 269 or permission of instructor. (Spring—evening)

GEOGRAPHY

265 Seminar: Geography of the Soviet Union (3)

Baclawski

Physical features, economic geography, natural and energy resources, industries. Soviet transportation system, agriculture, multinational population trends; emphasis on population patterns along borderlands, especially Sino-Soviet border. (Fall—evening)

266 Seminar: Geography of China (3)

True

Physical and economic geography; emerging industries, energy resources, transportation system. Emphasis on population "explosion"—its distribution and significance—and on regional geography, particularly on the Sino-Soviet border, Manchuria, Tibet, Mongolia, Inner Mongolia, and Sinkiang. (Spring—evening)

HISTORY

Prerequisite: appropriate preparation in second-group History courses and consent of instructor.

205-6 Seminar: Modern History of Eastern Europe (3-3)

Petrov

East Central and Southeastern Europe in the 19th and 20th centuries. *First half:* to the mid-1930's. *Second half:* to the communist take-over (1948). (Academic year—day)

207 Seminar: The Communist Party of the Soviet Union (3)

Ploss

Evolution of the communist movement of the Soviet Union. Comintern, Cominform, and other fundamentals of international communist organization. Selected case studies of individual congresses of the CPSU. (Spring—day)

208 Research Seminar: History of World Communism (3)

Thornton

(Formerly Research Seminar: History of the Comintern)
History of international communism. (Not offered 1969-70)

237 Seminar: Soviet Foreign Policy, 1917-1953 (3)

Petrov

Revolutionary concept of diplomacy. Parallel instruments of foreign policy during the era of "capitalist encirclement," 1917-1939. From Nazi-Soviet partnership to the alliance with the West, 1939-1945. Foreign policies of the cold war, 1945-1953. (Fall—day)

245 Research Seminar: Russia and Europe (3)

Thompson

Prerequisite: History 145-46 or equivalent. (Fall—day)

288 Research Seminar: History of Chinese Communism (3)

Thornton

History of the relations between the Communist Party of China and the Comintern. (Spring—evening)

295-96 Research Seminar: the Modern Far East (3-3)

Johnson

First half: social and intellectual revolution in Modern China; replacement of scholar-gentry by 20th century intelligentsia. Emphasis on radical change after 1919. *Second half:* development of U. S. Far Eastern policy since 1898; emphasis on coming of World War II and U. S. policy toward China since 1941. Prerequisite: History 195-96 or equivalent. (Academic year—day)

346 Readings in Russian History (3)

Thompson

Russian 19th and 20th century history. Emphasis on political and intellectual movements reflecting the rise and fall of the revolutionary cycle. (Spring—day)

387 Readings in the History of Sino-Soviet Relations (3)

Thornton

(Fall—evening; summer 1969)

POLITICAL SCIENCE**215-16 Seminar: the Communist Camp in World Politics I-II (3-3)** London

First half: significant issues of communism, particularly in the Soviet Union and Red China; concept and structure of "world socialist system"; intra-Bloc relations with emphasis on the Sino-Soviet dispute. Prerequisite: 3 semester hours in modern political theory. *Second half:* political ramifications of the communist movement and its relations with the noncommunist world. Prerequisite: 3 semester hours in international relations or comparative government. (Academic year—day)

224 Readings in Socialism and Communism (3)

Kraus

Readings of primary and secondary works ranging from pre-Marxian and Marxian socialism to contemporary Marxism-Leninism. Prerequisite: 3 semester hours in modern political theory. (Fall—day)

225 Seminar: Marxism-Leninism (3)

Kraus

Crucial theoretical problems, such as the nature of revolution, dictatorship of the proletariat, transition to communism, imperialism, and national liberation in Marxian and contemporary communist doctrine. Prerequisite: Political Science 224 or permission of instructor. (Spring—evening)

227 Seminar: Government and Politics of Eastern Europe (4)

Gyorgy

Comparative study of principal political, social, economic institutions; Soviet stake; patterns of Soviet domination; efforts toward economic and political integration; impact of the Sino-Soviet dispute; U. S. policy toward satellite nations. Workshop: Eastern Europe in world affairs. (Not offered 1969-70)

229 Readings in Soviet Government and Politics (3)

Elliott

Readings in contemporary Soviet domestic government and politics. Prerequisite: 3 semester hours selected from History 146, Political Science 112, or equivalent. (Fall—evening)

230 Seminar: International Communism (3)

Metz

Fall semester: emphasis on operational techniques. *Spring semester:* case studies. Students may receive credit for the fall semester and also the spring semester, but neither semester may be repeated for credit. (Fall and spring—evening)

231 Seminar: Sino-Soviet Relations (3)

Michael

Background, development, and status of conflict within the communist movement; emphasis on the role of Chinese communists. Prerequisite: 3 semester hours selected from History 187; Political Science 101, 194; or equivalent. (Spring—day)

232 Seminar: International Communications (3)

Dasbach

East-West perspectives. Theory and history of national patterns of international communications focusing on basic political and psychological

aspects of communication between major communist and noncommunist powers. (Spring—day)

233 Seminar: Soviet Government and Politics (3) Elliott

Research seminar in selected problems of Soviet domestic government and politics. **Emphasis:** since Stalin. **Prerequisite:** Political Science 229 or consent of instructor. (Spring—evening)

234 The Soviet Political Process (3) Ploss

Influence of revolutionary ideas, traditions, and accidental events on Soviet organization, and on administration of Soviet social, economic, national, and military policies; application of these policies by leaders to maintain power. (Fall—day)

237 Chinese Law (3) Hsia

Emphasis on the legal system of Communist China; analysis of the constitutional law of the People's Republic of China including general principles, state structure, and rights and duties of citizens; a brief survey of the administration of justice—courts, procuratorates, and lawyers; marriage law, land law; counterrevolutionary act and other criminal statutes; principles of civil law; communist Chinese concept of international law. (Spring—evening)

238 Soviet Law (3) Ramundo

Concept of "socialist legality"; legal relationship of individual to state and other participants in Soviet society; role of Party in Soviet legal system; Soviet philosophy of law; state (constitutional) law; Soviet federalism; governmental apparatus, rights and obligations of citizenship; criminal law; property law; labor law; selected topics in civil law and procedure; international law. (Fall—as arranged)

253 Seminar: Chinese Government and Politics (3) Michael

Political institutions and concepts in late imperial times, during the revolution, under national government, and under communism. **Emphasis** on the communist period. **Prerequisite:** 3 semester hours selected from History 187; Political Science 101, 194; or equivalent. (Fall—day)

254 Colloquium: Modern China (3) Michael

Interuniversity research colloquium of faculty members of the Institute for Sino-Soviet Studies and other area universities from different disciplines concerned with the study of modern China. Critical discussions of research plans and studies in progress in weekly sessions. Advanced graduate students admitted with permission of faculty group. (Fall and spring—day)

255 Colloquium: Russia and Eastern Europe (3) London, Gyorgy

Interuniversity research colloquium of faculty members of the Institute for Sino-Soviet Studies and other area universities from different disciplines concerned with the study of Russia and Eastern Europe. Critical discussions of research plans and studies in progress in weekly sessions. Ad-

* Same as Law 547 (2). Graduate students registering for Political Science 237 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.

* Same as Law 546 (2). Graduate students registering for Political Science 238 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.

vanced graduate students admitted with permission of faculty group.
(Fall and spring—day)

257 Seminar: Communism in Developing Countries (3)

Examination of international communist policy for, and communist parties in, developing countries. Case studies of Asia, Africa, and Latin America. Basic communist concepts of imperialism and nationalism; development and current application of Soviet and Chinese variants of strategy and tactics for "national liberation." (As arranged)

258 Seminar: Communist Parties in the Noncommunist World (3)

Movements and ideological variations of communist parties of France, Italy, the Scandinavian countries, and other Central and West European nations. Case studies on communist problems of Middle East and North African nations. (As arranged)

265-66 Chinese Communist Policy Processes (3-3)

Determinants of policy, view of the world, instrumentalities and locus power, interrelationship between domestic and foreign policy, formulation and implementation of policy. Prerequisite to Political Science 265: 3 semester hours selected from Political Science 101, 194, or equivalent. Prerequisite to Political Science 266: Political Science 265 or equivalent. *First half: readings. Second half: research seminar.* (Academic year—evening) Hinton

269 Seminar: Soviet Foreign Policy (3)

External policies and relations of the USSR; world objectives of Soviet leaders; relations with other communist states, Western powers, and other countries; international propaganda, disarmament policy, foreign economic relations. Prerequisite: 3 semester hours selected from History 137, 145-46, or equivalent. (Spring—evening) Elliott

270 Political and Social Institutions of Eastern Europe (3)

Major political and social factors which have shaped the inter-war, World War II, and post-war evolution of Eastern Europe. Emphasis on sociological and anthropological forces which have contributed to "Balkanization" of this area in the last fifty years. Each time the course is offered the concentration will be on one or two selected countries. (Not offered 1969-70) Gyorgy

274 Principles and Problems of International Political Communication (3)

Reading and discussion of public opinion, foreign policy relationships and operation of international political communication programs by major world powers as a tool of foreign policy. (Fall—day) Dasbach

284 Seminar: Comparative Communist Systems (3)

A comparative examination of the major characteristics of communist systems—party history, structure, foreign policy, psychological influences, ideology, and modernization. Emphasis on methodological problems in comparative communist politics. (Spring—day) Staf

288 Seminar: Soviet Military Policy and Strategy (3)

Soviet developments in military policy and strategy with attention to intra-Bloc military cooperation, political context of Soviet military policy, significant changes in recent Soviet military thought. (Fall—evening) Kolkowicz

294 Seminar: Governments and Politics of Japan and Korea (3)

Readings, research, and discussion on contemporary political problems and relevant historical background of Japan, North and South Korea. (As arranged)

295 Seminar: Chinese Communist Foreign Policy (3)

Hinton

Objectives; formulation and implementation of foreign policy; Communist China as Asian state, revolutionary influence, would-be power. Prerequisite: 3 semester hours selected from Political Science 101, 194, or equivalent. (Spring—day)

296 Seminar: the Communist Role in Far Eastern International Politics (3)

Hinton

Evolution of communist strategy for Asia, armed struggle in South and Southeast Asia, wooing of national bourgeoisie, development of Asian communist states, local communist parties since World War II, Sino-Soviet rivalry. (Fall—evening)

298 Southeast Asia in World Politics (3)

Gordon

Southeast Asia in great-power perspective. Overlapping and conflicting interests, foreign policies, and military requirements of the United States, Japan, China, and the USSR. Balance-of-power concept and development of Asian subsystem. (Spring—evening)

PSYCHOLOGY**259 Seminar: Social Psychology of Communism (3)**

White

Public and governmental opinion in communist countries, authoritarian thinking, communist propaganda, problems of Western communication with communist countries. (Fall—evening)

International Affairs

See "Public and International Affairs."

Italian

See "Romance Languages and Literatures."

Journalism

Associate Professor R.C. Willson (Chairman)

Associate Professorial Lecturers H.L. Coppenbarger, F.L. Dennis, T.R. Smith

Assistant Professorial Lecturers H.E. Paine, R.D. Woodward, George Cheely, Shirley Elder, Philip Robbins, Arthur Settel, W.E. Rice, R.J. Williams

Bachelor of Arts with a major in Journalism (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, including English 51-52 or 71-72, History 71-72 or Political Science 5-6, and Journalism 71-72.

Required: the general requirements, pages 81-85, including I and II below.

I. Twenty-four hours of second-group courses in Journalism, as follows: (a) Journalism 111, 196, 198; (b) nine hours chosen from Journalism 121, 133, 137, 138, 139; (c) six hours chosen from Journalism 115, 116, 117, 140, 145, 146, 151.

II. Twelve hours of second-group courses, chosen in consultation with the major adviser, in one other department of Columbian College of Arts and Sciences. Students selecting science may take courses in more than one department.

American Civilization 101 is recommended as a senior-year elective for Journalism majors.

FIRST GROUP

71-72 Journalism in American Society (3-3)

Willson

First half: evolution of newspapers and other media in relation to political, social, and economic life; concept of press freedom. *Second half:* mass media, problems of contemporary journalism, emphasis on media-government relations. (Academic year—day and evening)

SECOND GROUP

111 Reporting (3)

Coppenbarger, Robbins

Gathering, evaluating, and writing news. (Fall and spring—day and evening)

115 Newspaper Editing and Make-up (3)

Woodward

Preparation of news copy, pictures, and other graphic material for publication; evaluation of news; page layouts; newspaper make-up. (Not offered 1969-70)

116 Magazine Layout and Design (3)

Paine

Layout, typography, and design for magazines, newsletters, house organs, and similar publications for associations, institutions, and industry. (Spring—evening)

117 Magazine Editing (3)

The editor's responsibility to publisher and readers. Setting the editorial goals and planning content and production to meet them. Editing copy for general and specialized magazines. (Fall—evening)

121 Feature Writing (3)

Willson

Free-lancing magazine articles, material obtained through independent investigation. (Fall—day)

125 Science Writing (3)

Writing science news for the mass media. (Not offered 1969-70)

133 Advanced Reporting: Community News (3)

Robbins

Coverage and writing of local news. (Spring—day)

137 Advanced Reporting: National Affairs (3)

Elder

Coverage and writing of federal government news from the point of view of the press association. (Fall—day)

138 Investigative Reporting (3)

Williams

In-depth reporting in selected areas of political, economic, and social affairs. (Not offered 1969-70)

- 139 **Advanced Reporting: Radio and Television News** (3) Cheely
Preparing news and public affairs programs for broadcast media.
(Spring—evening)
- 140 **Photojournalism** (3) Smith
Photographic techniques affecting publication, illustration and story angle, standards of judgment in selection and use of pictures, captions, editing, technique, cropping for effective reproduction. (Spring—evening)
- 145 **Principles and Problems of Public Relations** (3) Williams
Principles, problems, and ethics of public relations for government agencies, commercial establishments, educational and other public institutions. Case histories of successful programs. (Fall—evening)
- 146 **Government Information** (3) Settel
Growth of information activities in government and the role of the information specialist. Writing and editing for government information operations. (Not offered 1969-70)
- 151 **Editorial Writing** (3) Rice
Writing editorials on public affairs. (Not offered 1969-70)
- 196 **Seminar** (3) Willson
For Journalism majors only. Research, individual and team writing of news, features, interpretative reports, and editorials on current major problem areas. (Spring—day)
- 198 **Law of the Press** (3) Dennis
Freedom of the press, censorship, legislative controls, publications as contempt of court, copyright, news gathering agencies, labor law and the newspaper business, law of libel, privileged matter, fair comment on public characters, right of privacy. (Fall—evening)

Latin American Studies

COMMITTEE ON LATIN AMERICAN STUDIES

Mario Rodríguez (*Chairman*), T.F. Carroll, Marvin Gordon, J.M. Howell, R.L. Humphrey, J.W. Robb, K.L. Storrs

Bachelor of Arts with a major in Latin American Studies (Interdepartmental).—Prerequisite: the Arts and Letters curriculum, page 76. The language requirement should be satisfied in Spanish.

Required: in addition to the general requirements, pages 81-85, (1) eighteen semester hours distributed as follows: Anthropology 182, Geography and Regional Science 161, History 163-64, and six semester hours chosen from Spanish 151-52, 155-56, or 157-58; (2) eighteen semester hours, including an interdisciplinary seminar (287), in one of the following areas: Anthropology, Economics, Geography and Regional Science, History, Political Science, or Hispanic Literature; (3) twenty-four semester hours of electives, chosen in consultation with an adviser.

Master of Arts in the field of Latin American Studies.—Prerequisite: a Bachelor's degree with a major in Latin American Studies, or equivalent. Majors in other fields may be considered for admission to Master's candidacy provided their undergraduate record includes sufficient course work in three of the following six areas: Anthropol-

ogy, Economics, Geography and Regional Science, History, Political Science, and Hispanic Literature.

Required: in addition to the general requirements, pages 89-95, (1) a major emphasis of twelve semester hours of graduate work in one of six areas: Anthropology, Economics, Geography and Regional Science, History, Political Science, or Spanish American Literature; (2) two graduate seminars (six semester hours each) in each of two of those areas not chosen for the major emphasis; (3) a thesis (299-300), six semester hours, in the area of major emphasis; (4) demonstration of proficiency in Spanish or Portuguese, or in English if the student's native language is Spanish or Portuguese; (5) the passing of a Master's Comprehensive Examination in the area of major emphasis and in the two minor areas.

Bachelor of Arts in the field of International Affairs with an emphasis on Latin America.—See page 363.

Master of Arts in the field of International Affairs with an emphasis on Latin America.—See pages 363-64.

Candidates for the degree of Doctor of Philosophy may elect Latin American History as an area of specialization in the field of History, Spanish American Literature as an area of specialization in the field of Romance Languages and Literatures, or Politics of Latin America as an area of specialization in the field of Political Science.

The following courses dealing with Latin America are currently available.

ANTHROPOLOGY

- 170 *Cultures of the Caribbean* (3)
- 171 *Native Peoples of North America* (3)
- 172 *Native Peoples of South America* (3)
- 182 *New World Archeology* (3)
- 185 *Latin American Archeology* (3)
- 282 *Advanced Archeology: North American Prehistory* (3)
- 287 *Seminar: Problems in Latin American Civilization* (3)

Reynolds
Humphrey
Staff
Humphrey
Humphrey
Staff
Rodriguez

ECONOMICS

- 185-86 *Economic History and Problems of Latin America* (3-3)
- 233-34 *Seminar: Land Policy Problems in Latin America* (3-3)
- 285-86 *Economic Development of Latin America* (3-3)
- 287 *Seminar: Problems in Latin American Civilization* (3)

Howell
Carroll
Staff
Rodriguez

GEOGRAPHY AND REGIONAL SCIENCE

- 127 *World Population and Settlement* (3)
- 161 *Latin America* (3)
- 287 *Seminar: Problems in Latin American Civilization* (3)

Gordon
Gordon
Rodriguez

HISTORY

- 162 *History of Spain and Portugal* (3)
- 163-64 *History of Latin America* (3-3)
- 165 *History of Brazil* (3)
- 166 *History of Mexico* (3)
- 261-62 *Research Seminar: Latin American History* (3-3)
- 264 *Research Seminar: Mexican History* (3)
- 287 *Seminar: Problems in Latin American Civilization* (3)
- 361-62 *Readings in Latin American History* (3-3)

Rodriguez
Rodriguez
Rodriguez
Staff
Rodriguez
Staff
Rodriguez
Rodriguez

POLITICAL SCIENCE

- 177 *Governments and Politics in Latin America* (3) Storrs
 178 *Latin America: Political Patterns and International Relations* (3) Storrs
 277-78 *Seminar: Latin American Politics* (3-3) Storrs
 287 *Seminar: Problems in Latin American Civilization* (3) Rodríguez

SPANISH

- 151-52 *The Spanish American Novel* (3-3) Robb
 155-56 *Spanish American Literature to 1880* (3-3) Robb
 157-58 *Spanish American Literature since 1880* (3-3) Robb
 253 *Seminar: Studies in Modern Spanish American Poetry* (3) Robb
 255 *Seminar: Studies in 20th Century Spanish American Theater* (3) Robb
 256 *Seminar: Studies in Mexican Narrative Prose* (3) Adem
 261 *Seminar: Studies in Spanish American Essayists* (3) Robb
 264 *Seminar: Studies in Recent Spanish American Fiction* (3) Robb
 266 *Seminar: Alfonso Reyes* (3) Robb
 287 *Seminar: Problems in Latin American Civilization* (3) Rodríguez

Linguistics—Graduate Study

COMMITTEE ON LINGUISTIC STUDY 1969-70

J.G. Allee, Jr. (*Chairman*), J.A. Frey, V.K. Golla, J.W. Hillis, J.C. King, R.K. Lewis, J.N. Mosél, David Nelson, Helen Yakobson

Master of Arts in the field of Linguistics.—An interdepartmental degree, directed by the Committee on Linguistic Study. Interested students should consult the Chairman of this Committee.

Prerequisite: a Bachelor's degree with a major (with a grade of high B or above) in one of the following, or equivalent. (1) An undergraduate major in French, German, Russian, or Spanish. (2) An undergraduate major in Anthropology, English, Linguistics, Mathematics, Philosophy, Psychology, Speech, or Statistics, together with a proficiency in French, German, Russian, or Spanish. (3) An undergraduate major in Education with a teaching field in French, German, Russian, or Spanish. (4) An undergraduate major in Education with a teaching field in English, Mathematics, or Speech, together with a proficiency in French, German, Russian, or Spanish.

Required: the general requirements, pages 89-95. The thirty semester hours must include twenty-four semester hours of course work as outlined in Groups I, II, and III, below, plus a thesis (equivalent to six semester hours).

Group I—fifteen semester hours consisting of Anthropology 162; 3 semester hours of the Structure of Modern English; Germanic Languages and Literatures 227-28; plus three semester hours selected from Anthropology 161, English 125, Psychology 115, or Speech and Drama 176.

Group II—six semester hours selected from Anthropology 193, 261; English 223-24; French 201, 212, 213-14; Germanic Languages and Literatures 201-2, 205-6, 209-10, 213-14, 223-24, 225-26; Slavic Languages and Literatures 125, 126, 206, 215-16; Spanish 201, 215-16. With the approval of the adviser students may substitute, if not previously elected, courses from Group I.

Group III—three semester hours selected from Chinese 123–24; Mathematics 101, 102, 122, 123, 201–2; Philosophy 122; Psychology 289; Speech and Drama 101, 279, 284, 291, 292, 295; Statistics 131, 161–62. With the approval of the adviser students may substitute, if not previously elected, courses from Groups I and II.

There is no undergraduate major in the field of Linguistics.

Students may elect Linguistics in the fields of Germanic Languages and Literatures and Romance Languages and Literatures toward the degree of Doctor of Philosophy.

Graduate students are urged to consult the Committee on Linguistic Study and the appropriate catalogues concerning courses which can be taken under the agreement for the Consortium of Universities of the Washington Metropolitan Area, Inc.

ANTHROPOLOGY

- 161 *Language and Culture* (3)
- 162 *Linguistics in Anthropology* (3)
- 193 *Anthropological Methods* (3)
- 261 *Field Methods in Linguistics* (3)

Golla
Golla
Krulfeld
Golla

CHINESE LANGUAGE AND LITERATURE

- 123–24 *Introduction to Chinese Linguistics* (3–3)

Staff

ENGLISH

- 125 *Introduction to English Linguistics* (3)
- 223–24 *Old English* (3–3)

Allee
Allee

GERMANIC LANGUAGES AND LITERATURES

- 201–2 *Middle High German* (3–3)
- 205–6 *Gothic* (3–3)
- 209–10 *Old High German* (3–3)
- 213–14 *Old Norse* (3–3)
- 223–24 *Linguistic Analysis of Modern German* (3–3)
- 225–26 *Seminar: Linguistics* (3–3)
- 227–28 *Sanskrit—Introduction to Indo-European Linguistics* (3–3)

Legner
Legner
King
Allee
King
King, Allee
King

MATHEMATICS

- 101 *Introduction to Mathematical Logic* (3)
- 102 *Axiomatic Set Theory* (3)
- 122 *Introduction to Abstract Algebra* (3)
- 123 *Linear Algebra* (3)
- 201–2 *Mathematical Logic* (3–3)

Nelson
Nelson
Staff
Staff
Nelson

PHILOSOPHY

- 122 *Advanced Logic* (3)

Griffith

PSYCHOLOGY

- 115 *Psychology of Language and Communication* (3)
- 289 *Seminar: Current Topics in Experimental Psychology* (3)

Mosel
Staff

ROMANCE LANGUAGES AND LITERATURES

FRENCH

| | |
|---|-------|
| 201 <i>Grammar, Composition, and Stylistics</i> (3) | Burks |
| 212 <i>Historical French Grammar</i> (3) | Mudge |
| 213-14 <i>Old French Literature</i> (3-3) | Mudge |

SPANISH

| | |
|---|--------|
| 201 <i>Grammar, Composition, and Stylistics</i> (3) | Mazzeo |
| 215-16 <i>Old Spanish</i> (3-3) | Neyman |

SLAVIC LANGUAGES AND LITERATURES

| | |
|--|----------|
| 125 <i>Russian Linguistic Structure I</i> (3) | Thompson |
| 126 <i>Russian Linguistic Structure II</i> (3) | Thompson |
| 206 <i>Old Russian Literature</i> (3) | Moser |
| 215-16 <i>History of the Russian Literary Language</i> (3-3) | Staff |

SPEECH AND DRAMA

| | |
|--|------------|
| 101 <i>Phonetics</i> (3) | Majerus |
| 176 <i>Speech, Hearing, and Language Development</i> (3) | Honeygosky |
| 279 <i>Anatomy and Physiology of Speech and Hearing</i> (3) | Bowling |
| 284 <i>Experimental Phonetics</i> (3) | Hillis |
| 291 <i>Seminar: Speech Pathology</i> (3) | Staff |
| 292 <i>Seminar: Audiology</i> (3) | Staff |
| 295 <i>Independent Research in Speech and Hearing</i> (arr.) | Staff |

STATISTICS

| | |
|---|----------|
| 131 <i>Contingency Table Techniques</i> (3) | Staff |
| 161-62 <i>Information Theory</i> (3-3) | Kullback |

Mathematics

Professors David Nelson, T.P.G. Liverman, Hewitt Kenyon (*Chairman*), C.T. Taam
 Professorial Lecturers W.H. Marlow, D.M. Dribin, Thomas Saaty, Joseph Blum, J.P. Mayberry
 Associate Professors W.A. Smith, Dagmar Henney, Irving Katz, I.I. Glick
 Associate Professorial Lecturer Emanuel Vegh
 Assistant Professors Ruth Bari, M.D. Green, E.A. Stone, Myrna Lee
 Assistant Professorial Lecturer Mabel Morris
 Instructor James McPherson

Bachelor of Arts or Bachelor of Science with a major in Mathematics (Departmental).—Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 76.

Required: in addition to the general requirements, pages 81-85, twenty-four semester hours of approved second- and third-group Mathematics courses.

Master of Arts in the field of Mathematics.—Prerequisite: a Bachelor's degree with a major in Mathematics at this University, or the equivalent.

Required: the general requirements, pages 89–95.

Doctor of Philosophy fields of study in Mathematics: Functional Analysis (Abstract Differential Equations, Functional Equations, Generalized Functions, Groups of Operators), Linear Algebra (Matrix Theory), Logic, Measure and Integration, Ordinary and Partial Differential Equations, Theory of Numbers, and Topology (General Topology, Analytic Topology, Topological Groups).—See pages 89–93, 95–97, for requirements for the degree.

Bachelor of Arts in Education with a teaching field in Mathematics.—Prerequisite: the Education curriculum, page 78.

Required: the Mathematics option and the professional courses listed on pages 110, 114.

Master of Arts in the field of Linguistics.—See pages 303–5.

Departmental prerequisite: Mathematics 24 or 33 is prerequisite to all second-group courses in Mathematics. Exception to this regulation may be made for Mathematics 101, 122, and 124. Students anticipating a substantial concentration in Mathematics should consult with the Department about early completion of these courses.

FIRST GROUP

3 College Algebra (3)

Equivalent to second-year high school algebra. Prerequisite: one year each of high school algebra and high school geometry. (Fall and spring—day and evening; summer 1969) Staff

6 Plane Trigonometry (3)

Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3 (or concurrent registration therefor). (Fall and spring—day and evening; summer 1969) Staff

9 General Mathematics I (3)

For students electing Mathematics 9 and 10 as a terminal sequence. Logic, sets, number systems. Prerequisite: two years of high school mathematics. (Fall and spring—day and evening; summer 1969) Staff

10 General Mathematics II (3)

Statistics and probability, exponents and logarithms, trigonometry. Prerequisite: Mathematics 9. (Fall—evening; spring—day and evening; summer 1969) Staff

15 Finite Mathematics I (3)

Introduction to logic, sets, and probability. Prerequisite: two years of high school mathematics. (Fall—day; spring—evening; summer 1969) Staff

16 Finite Mathematics II (3)

Vectors and matrices, mathematics of finance and accounting, linear programming, introduction to game theory. Prerequisite: Mathematics 15. (Spring—evening; summer 1969) Staff

19 Geometry from a Modern Viewpoint (3)

Open only to District of Columbia teachers participating in an In-service Institute supported by the National Science Foundation. (Fall—late afternoon) Staff

***21 Calculus I (3)**

Staff

Elementary concepts of analytic geometry. Differentiation of algebraic functions with applications. Prerequisite: Mathematics 3 and 6; or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry; or equivalent. (Offered last time summer 1969)

***22 Calculus II (3)**

Staff

Differentiation and integration of transcendental functions and applications, topics in analytic geometry, techniques of integration. Prerequisite: Mathematics 21. (Offered last time fall 1969-70—day and evening; summer 1969)

***23 Calculus III (3)**

Staff

Techniques of integration, vector concepts, improper integrals, polar coordinates, infinite series. Prerequisite: Mathematics 22. (Offered last time spring 1970—day and evening; summer 1969)

***24 Calculus IV (3)**

Staff

Solid geometry, multiple integration and partial differentiation with applications, line and surface integrals, differential equations. Prerequisite: Mathematics 23; with departmental permission, students may register concurrently in Mathematics 23 and 24. (Fall—day and evening; summer 1969. Offered last time fall 1970-71.)

***30 Precalculus (3)**

Staff

Logic, set theory, real number system, inequalities, basic analytic geometry, functions and relations. Polynomial, trigonometric, logarithmic, and exponential functions. Prerequisite: Mathematics 3 and 6; or one and one-half years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry; or equivalent. (Fall and spring—day and evening; summer 1969)

***31 Calculus of One Variable (3)**

Staff

Differentiation and integration of algebraic and elementary transcendental functions, with simple applications. Prerequisite: Mathematics 30 or equivalent.[†] (Fall and spring—day and evening)

***32 Calculus of Several Variables (3)**

Staff

Partial derivatives, multiple integrals, infinite series. Prerequisite: Mathematics 31. (Spring—day and evening)

***33 Calculus of Vector Functions (3)**

Staff

Elementary linear algebra, vectors, and matrices. Vector calculus, implicit function theory. Prerequisite: Mathematics 32. (Offered first time summer 1970)

***34 Introduction to Linear Algebra (3)**

Staff

Linear functions, solutions of equations, dimension and rank, determinants, eigenvalues, quadratic forms, change of basis. Prerequisite: Mathematics 31 or permission of instructor. (Offered first time summer 1970)

[†] Beginning with the fall semester, 1969, the sequence Mathematics 21, 22, 23, and 24 will be replaced at the rate of one course a semester with Mathematics 30, 31, 32, 33, and 34.
[†] Mathematics 30 may be waived as a prerequisite requirement by examination on scheduled dates.

SECOND GROUP

- 101 Introduction to Mathematical Logic (3)** Nelson
Introduction to proof theory and model theory of propositional and predicate calculi, computability, topics from foundations of mathematics. (Fall—late afternoon)
- 102 Axiomatic Set Theory (3)** Nelson
Zermelo-Fraenkel set theory, ordinals and cardinals, foundations of the real number system. Prerequisite: Mathematics 101 or permission of instructor. (Spring—late afternoon)
- 106 Introduction to Topology (3)** Stone
Prerequisite: Mathematics 139 or permission of instructor. (Spring—evening)
- 107 Introduction to Algebraic Topology (3)** Barl
Prerequisite: Mathematics 122 and 139, or permission of instructor. (Summer 1969)
- 111 Mathematics for Engineers and Physicists I (3)** Staff
Differential equations, linear algebra. (Fall—evening; summer 1969)
- 112 Mathematics for Engineers and Physicists II (3)** Staff
Fourier series, Laplace transformation, partial differential equations. Prerequisite: Mathematics 111. (Spring—evening; summer 1969)
- 113 Graph Theory (3)** Staff
Directed and undirected graphs; unicursal graphs; shortest paths; Hamilton circuits; incidence, circuit, and cut-set matrix relations; coloring problems; network flow. (Summer 1969)
- 120 Introduction to Theory of Numbers (3)** Vause
Prerequisite: Mathematics 122 or equivalent. (1970-71 and alternate years)
- 122 Introduction to Abstract Algebra (3)** Staff
(Fall—evening; spring—day; summer 1969)
- 123 Linear Algebra (3)** Staff
Prerequisite: Mathematics 122. (Spring—evening)
- 124 Introduction to Matrix Theory (3)** Staff
Elementary theory of finite vector spaces, determinants, equivalence, matrices with polynomial elements, similarity of matrices. (Fall—evening; summer 1969)
- 134 Introduction to Boundary Value Problems (3)** Staff
Prerequisite: Mathematics 111 or 142. (1970-71 and alternate years spring—evening)
- 135 Projective Geometry (3)** Dribin
Prerequisite: Mathematics 123 or 124, or equivalent. (Fall—evening)

139 **Advanced Calculus I (3)** Staff
Review and extension of elementary one-variable calculus, emphasis on the theoretical foundations. (Fall—day and evening; spring—evening; summer 1969)

140 **Advanced Calculus II (3)** Staff
Calculus of several variables. Prerequisite: Mathematics 139 or equivalent. (Spring—evening; summer 1969)

142 **Theory of Differential Equations (3)** Staff
Prerequisite: Mathematics 139. (Fall—evening)

153 **Introduction to Numerical Analysis (3)** Marlow
(1970-71 and alternate years)

154 **Difference Equations (3)** Staff
(1970-71 and alternate years)

157 **Introduction to Complex Variable Theory (3)** Staff
Prerequisite: Mathematics 139. (Spring—evening; summer 1969)

THIRD GROUP

201-2 **Mathematical Logic (3-3)** Nelson
(Academic year—evening)

220 **Theory of Numbers (3)** Vause
Prerequisite: Mathematics 120 or equivalent. (1970-71 and alternate years)

237-38 **Theory of Functions of a Complex Variable (3-3)** Staff
(Academic year—evening)

239-40 **Ordinary Differential Equations (3-3)** Glick
(1970-71 and alternate years)

243-44 **Numerical Analysis (3-3)** Marlow
(Academic year—late afternoon)

250 **Measure of Integration (3)** Glick
Lebesgue measure and integration, measure and integration in abstract spaces, the Daniell integral. (Spring—evening)

251-52 **Real and Abstract Analysis (3-3)** Liverman
Elements of topology: filters, compactness, metric spaces. Continuity and double limits. Banach and Hilbert spaces. Vector to vector functions; implicit function theorem. Prerequisite: Mathematics 106, 123, and 140; or equivalent. (1970-71 and alternate years)

255 **Differential Geometry (3)** Dribin
(1970-71 and alternate years)

256 **Introduction to Algebraic Geometry (3)** Dribin
(Spring—evening)

257 **Lie Groups (3)** Katz
(Not offered 1969-70)

- 258 Group Representations (3)**
(Spring—evening) Katz
- 259 Advanced Topics in Group Theory (3)**
(Not offered 1969–70)
- 261–62 Theory and Application of Generalized Functions (3–3)** Liverman
Definition of distributions of Schwartz and Gelfand-Silov. Operational and integral transform methods applied to the existence theory and explicit solution of ordinary and partial differential equation problems of mathematical physics. Structure of distributions and ultradistributions. Schwartz kernel theorems. Engineering and physics applications. Prerequisite: Mathematics 124, 140, and 157; or permission of instructor. (Academic year—evening)
- 265–66 Modern Algebra (3–3)** Lee
Fundamental concepts of theory of groups, rings, and fields; theory of finite fields, extension fields, Galois groups, factorization theory in Gaussian domains and groups with operators. Prerequisite: Mathematics 123 or equivalent. (Academic year—late afternoon)
- 267 Topics in Matrix Theory (3)** Katz
Theory of linear transformations (vector spaces over a division ring), advanced classical theory, matrix representation of groups and rings, special topics as time allows. Prerequisite: Mathematics 123 and an elementary knowledge of groups, rings, and fields. (Not offered 1969–70)
- 268 Calculus of Variations (3)** Blum
(Summer 1970 and alternate summers)
- 269 Integral Equations (3)** Glick
(Summer 1970 and alternate summers)
- 270 Tensor Analysis (3)** Glick
(Summer 1969)
- 277 Partial Differential Equations (3)** Glick
(1970–71 and alternate years)
- 281–82 General Topology (3–3)** Green
(1970–71 and alternate years)
- 283 Topological Groups (3)** Green
(Fall—late afternoon)
- 284 Ordered Topological Spaces (3)** Green
Prerequisite: Mathematics 282 or equivalent, or permission of instructor (Summer 1969)
- 285 Algebraic Topology (3)** Bari
(Fall—evening)
- 287–88 Functional Analysis (3–3)** Taam
Fundamental results of functional analysis. Students participate in classroom presentation and discussion. Topics include: abstract integration and measure theory, linear topological spaces, Hilbert and Banach spaces.

weak topology, Bochner's integral, Banach algebras and application to spectral representation, semi-groups of operators, differential equations in Banach spaces. Prerequisite: Mathematics 238, 250 or 106, 251; or equivalent. (Academic year—day)

289-90 **Topics in Functional Analysis and Applications (3-3)** Taam
(Formerly *Applications of Functional Analysis*)

Qualified students encouraged to work with instructor on research projects. Topics selected to serve research interests of instructor and students. Prerequisite: Mathematics 288 or equivalent. (1970-71 and alternate years)

291-92 **Seminar (3-3)** Staff
(Academic year—as arranged)

295 **Reading and Research (3)** Staff
May be repeated once for credit. (Fall and spring—as arranged)

299-300 **Thesis Research (3-3)** Staff
(Academic year—as arranged; summer 1969)

FOURTH GROUP

398 **Advanced Reading and Research (arr.)** Staff
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

399 **Dissertation Research (arr.)** Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Microbiology

Professors A.M. Griffin, Mary Louise Robbins, R.C. Parlett (*Chairman*), L.J. Griffith (*Visiting*), Rudolph Hugh

Professorial Lecturers F.B. Gordon (*Virology*), Dorothy Heilman (*Cellular Immunology*), M.S. Legator (*Microbial Genetics*)

Associate Professors L.F. Affronti, Melvin Reich

Assistant Professors G.L. Wright, Jr., Yang-Ming Chu, Kun-yen Huang

Assistant Professorial Lecturers P.J. Price, Rosalie De Giovanni-Donnelly

Lecturer E.L. Speck

Master of Science in the field of Microbiology.—Prerequisite: a Bachelor's degree from this University, or equivalent, with a major in Biology, Botany, Chemistry, or Zoology. The undergraduate program must include the following courses or equivalent. Biological Sciences 11-12; Chemistry 11-12, 51-52, 53-54; Mathematics 21 and 22 or 30 and 31 (22 or 31 may be taken concurrently with the graduate program), Physics 1, 2.

Required: the general requirements, pages 89-95. The thirty semester hours of course work must include Microbiology 211 and 212 (if not presented for admission), plus 277-78, 299-300, and Biochemistry 221-22. The remaining academic work should consist of graduate-level courses selected with the approval of the instructor.

Doctor of Philosophy fields of study in Microbiology: *Determinative Bacteriology, Immunochemistry, Immunology, Microbial Genetics, Microbial Pharmacology, Microbial Physiology, and Virology*.—See pages 89–93, 95–97, for requirements for the degree.

211 Microbiology (4)

Staff

Bacteria, fungi, rickettsiae, viruses. Prerequisite: any biological laboratory science, Chemistry 51–52, 53–54. Laboratory fee, \$16. (Fall—day)

212 Pathogenic Microbiology (4)

Staff

Continuation of Microbiology 211; emphasis on harmful activities of microorganisms. Prerequisite: Microbiology 211 or equivalent. Laboratory fee, \$16. (Spring—day)

214 Tissue Cell Culture and Somatic Variation (4)

Chu, Price

Techniques of tissue culture and means of studying somatic variations. Prerequisite: Microbiology 211, 212. (Spring—day)

225 Microbial Physiology I (3)

Affronti, Reich

Biochemical features of various microorganisms—especially bacteria—described and compared with those of the animal cell. Prerequisite: Biochemistry 221–22, Microbiology 211; or permission of instructor. (Fall—day)

226 Microbial Physiology II (3)

Affronti, Reich

(Formerly Microbiology 227)
Interactions of drugs and microorganisms—action of drugs on microbes, resistance of microbes to drugs, metabolism of drugs by microbes. Prerequisite: Microbiology 225 or permission of instructor. (Spring—day)

230 Immunology (4)

Wright

Fundamental immunologic concepts. Serologic and immunologic procedures as applied to clinical and research situations emphasized in the laboratory. Prerequisite: Microbiology 212 or equivalent. Laboratory fee, \$16. (1970–71 and alternate years: fall—day)

231 Cellular Immunology (2)

Staff

Study of immunological functions of reticulo-endothelial tissues, theories of autoimmunity, graft rejection, tumor immunity, delayed hypersensitivities, and heritable immunogenic defects. (Fall—day)

233 Molecular Biology of Viruses (4)

Huang, Robbins

Biochemical and genetic characterization of viruses. Prerequisite: Microbiology 201 or 211. Laboratory fee, \$16. (Fall—day)

235 Systematic Bacteriology (2)

Hugh

History of bacterial classification, international rules of nomenclature as applied to bacteria, development of bacterial classification based upon relationships, survey of characteristics of bacterial groups. Prerequisite: Microbiology 212 or equivalent. (1969–70 and alternate years: fall—day)

251 Bacteriology (2)

Hugh

Clinical situations involving bacteriology. Prerequisite: Microbiology 211 or equivalent. (Fall—day)

- 255 Virology (2)** Robbins, Huang
General principles of virology; emphasis on clinical situations. Prerequisite: Microbiology 201 or 212. (Fall—day)
- 257 Immunochemistry (3)** Wright
Biochemical, physiochemical, and genetic aspects of immunologically active substances. Prerequisite: Biochemistry 221-22 or equivalent. Microbiology 211, 212, and 230 recommended. Limited enrollment. (1969-70 and alternate years: spring—day)
- 258 Microbial Genetics (2)** Staff
Survey of microbial systems that depict basic concepts of genetic principles. Prerequisite: Microbiology 212 or equivalent. (Spring—day)
- 277-78 Seminar: Microbiology (1-1)** Staff
(Formerly Seminar: Bacteriology)
Required of graduate students. (Academic year—day)
- 293 Special Topics in Microbiology (arr.)** Staff
Selected topics in microbiology. May be repeated for credit. (Academic year—day)
- 295 Research in Microbiology (arr.)** Staff
Content differs each time the course is offered; may be repeated for credit. (Fall and spring—as arranged; summer 1969)
- 299-300 Thesis Research (3-3)** Staff
(Academic year—as arranged)
- 398 Advanced Reading and Research (arr.)** Staff
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)
- 399 Dissertation Research (arr.)** Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Music

Associate Professors George Steiner (Chairman), Robert Parris

Assistant Professor N.A. Tilkens

Assistant Professorial Lecturers Cecelia Porter, N.O. Scribner, Jr.

Studio Lecturers in Applied Music J.E. Stephens, Margaret Tolson, Jule Zabaya, Marian McNabb, Constance Russell, Sidney Forrest, R.O. White, Phyllis Gieseler, S.E. Ramsay, N.M. Irvine, Morris Kirshbaum, Ruth Wright, Diana Molinari, Judith Gappa, R.E. Luse, T.H. Wardlow, E.C. Johns, R.A. Norris

Bachelor of Arts with a major in (1) Music History and Literature, (2) Music Theory, or (3) Applied Music (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, or equivalent, including Music 5-6.

Required: in addition to the general requirements, pages 81-85, Music 103-4 and 131-32; a minimum of four semesters in Music Ensemble groups (or evidence of

equivalent experience); twenty-four semester hours of second-group courses as follows:

1. *For the major in Music History and Literature.*—Twelve semester hours of Music History and Literature courses, six hours of Applied Music, and six hours of Music Theory courses.

2. *For the major in Music Theory.*—Twelve semester hours of Music Theory courses, six hours of Music History and Literature courses, and six hours of piano (other instrument or voice if departmental requirements for proficiency in piano are met).

3. *For the major in Applied Music.*—Twelve semester hours of Applied Music in field of specialization, senior recital, six hours of Music Theory courses, and six hours of Music History and Literature courses.

Master of Arts in the field of Musicology.—Prerequisite: a Bachelor's degree with a major in music, or equivalent.

Required: the general requirements, pages 89-95; eighteen semester hours of Music History and Literature or Music Theory courses; six semester hours of Applied Music; and a thesis demonstrating research ability in musicology.

Master of Music in the field of Music Theory, Music Composition, Conducting, or Applied Music.—Prerequisite: a Bachelor's degree with an undergraduate major in one of the following, at this University, or equivalent: (1) Music History and Literature, (2) Music Theory, or (3) Applied Music.

Required: the general requirements, pages 89-95. The thirty semester hours of required second- and third-group course work including a thesis (299-300) are as follows:

1. *In the field of Music Theory.*—Eighteen semester hours of Music History and Literature and Music Theory courses, six hours of Applied Music, and a thesis demonstrating research ability in theoretical, creative, or analytical techniques.

2. *In the field of Music Composition.*—Eighteen semester hours of Music History and Literature and Music Theory courses, six hours of Applied Music, and a creative thesis of one composition in large form properly prepared for performance (chamber music, a symphonic form, or a choral work with orchestral accompaniment) including a written theoretical, formal, and harmonic analysis of the work.

3. *In the field of Conducting.*—Eighteen semester hours of Music History and Literature and Music Theory courses, six hours of Applied Music, and a thesis demonstrating research ability in theoretical, creative, or analytical techniques. The requirements also include an acceptable public conducting performance.

4. *In the field of Applied Music.*—Twelve semester hours of Applied Music in the area of concentration (piano, harpsichord, organ, voice, a bowed string or an orchestral woodwind instrument), twelve hours of Music Theory and Music History and Literature courses. The thesis area consists of (1) a public recital or performance before a designated committee—such a recital or performance must be representative of an extensive and well-rounded repertory, performed on a professionally accepted artistic level, including verbal historical and analytical lecture notes on the musical content of the program; (2) demonstrated leadership in an ensemble performance (opera or oratorio for voice); and (3) a written report on some approved theoretical area related to the student's concentration.

Bachelor of Arts in Education with a teaching field in Music.—Prerequisite: the Education curriculum, page 78.

Required: the Music option and professional courses listed on pages 110, 114.

MUSIC HISTORY AND LITERATURE

FIRST GROUP

3 Introduction to Music (3)

Introductory history of musical styles, related to listening; elements and materials of music. (Fall—day; spring—evening; summer 1969)

Steiner, Tilken, Porter

4 Survey of Music Literature (3)

Steiner, Tilkens

Introductory study of musical forms, structures, and textures; aural analysis of selected literature. (Spring—day; summer 1969)

SECOND GROUP**103-4 History of Music (3-3)**

Tilkens

Development of music in the Western World from the early Christian Era to the present. (Academic year—day)

105 Music of the Baroque Period (3)

Tilkens

Study of the musical styles, techniques, and literature from 1600 to 1750. (Fall—day)

106 Music of the Classic Period (3)

Steiner

Study of styles, techniques, and literature from the 18th century schools through Haydn, Mozart, and Beethoven. (Summer 1969)

107 Music of the Romantic Period (3)

Porter

Study of the musical styles, backgrounds, and literature from Schubert through the 19th century. (Fall—day)

108 Music of the 20th Century (3)

Steiner

The principal schools, techniques, developments, and trends of the 20th century. (Not offered 1969-70)

109 Orchestra Literature (3)

Steiner

Survey of the history and styles of orchestra literature, analysis of representative works. (Not offered 1969-70)

110 Chamber Music Literature (3)

Steiner

Survey of the history and styles of chamber music literature, analysis of representative works. (Fall—day)

121 The Opera (3)

Porter

Survey of the history and styles of opera, analysis of representative works. (Spring—day)

125 Keyboard Music Literature (3)

Tilkens

Survey of the history, style, and major content of the keyboard literature from the 16th century to the present. (Spring—day)

173 Piano Pedagogy (3)

Tolson

Principles, materials, and methods for teaching the piano. (Spring—day)

THIRD GROUP**203 Bibliography and Research Methodology (3)**

Porter

(Not offered 1969-70)

209 History of Musical Instruments (3)

Steiner

(Not offered 1969-70)

234 Seminar: Performance Practices in Selected Areas (3)

Staff

(Not offered 1969-70)

- 238 Seminar: Analytical Studies in Music History (3)
Topic for 1969-70: the music of Beethoven. (Spring—day)

Steiner

MUSIC THEORY

FIRST GROUP

1 Elements of Music Theory (3)

Tilkens

Notation, scales, keys, intervals, terms, rhythms, ear-training, sight-singing, elementary keyboard harmony, melodic and harmonic dictation. (Fall and spring—day; summer 1969)

5-6 Elementary Harmony (3-3)

Parris

Triads, inversions; chord analysis, construction, and progression; part-writing, modulations, figured bass. Prerequisite: Music 1 or satisfactory passing of placement examination. (Academic year—day; summer 1969)

SECOND GROUP

131-32 Advanced Harmony (3-3)

Parris

Practice in harmonic writing and analysis, realization of unfigured bass, altered chords, elementary 18th century counterpoint. Prerequisite: Music 5-6 or equivalent. (Academic year—day)

135 Counterpoint (3)

Parris

Study and practice of early contrapuntal techniques. (Spring—day)

137 Orchestration (3)

Parris

Instrumental scoring. (Not offered 1969-70)

138 Form and Analysis (3)

Parris

Analysis of musical forms in representative musical literature. (Fall—day)

151 Conducting (3)

Steiner

Technique of conducting, score reading, rehearsal procedures, analysis, and interpretation of selected musical literature; practice in conducting. (Not offered 1969-70)

THIRD GROUP

231-32 Composition (3-3)

Parris

(Academic year—arranged)

235 Advanced Counterpoint (3)

Parris

(Spring—as arranged)

251 Advanced Conducting (3)

Steiner

(Fall and spring—as arranged)

299-300 Thesis Research (3-3)

Staff

(Academic year—as arranged; summer 1969)

APPLIED MUSIC

All Applied Music courses may be repeated for credit. The supplementary fee is waived for full-time music majors. With the exception of Music 51, 52, 53, and 54, one-semester hour courses are individual lessons of $\frac{1}{2}$ hour a week—supplementary fee, \$40; two-, three-, or six-semester hour courses are individual lessons of 1 hour a week—supplementary fee, \$80. Six-semester hour courses include lessons, supervised ensemble preparation, and required practice 15 hours a week. Music 51, 52, 53, and 54 do not include individual lessons and carry no supplementary fee.

FIRST GROUP

Three hours of practice are required for each semester hour.

- | | |
|---|---------------------------------|
| 11 Piano (1) | Tolson, McNabb, Russell, Porter |
| (Fall and spring—as arranged; summer 1969) | |
| 12 Piano (2) | Tolson, McNabb, Russell, Porter |
| (Fall and spring—as arranged) | |
| 13 Voice (1) | Zabawa, Gieseler |
| (Fall and spring—as arranged; summer 1969) | |
| 14 Voice (2) | Zabawa, Gieseler |
| (Fall and spring—as arranged) | |
| 15 Organ (1) | Scribner, McNabb |
| (Fall and spring—as arranged; summer 1969) | |
| 16 Organ (2) | Scribner, McNabb |
| (Fall and spring—as arranged) | |
| 17 Orchestral Instrument (1) | Staff |
| (Fall and spring—as arranged; summer 1969) | |
| 18 Orchestral Instrument (2) | Staff |
| (Fall and spring—as arranged) | |
| 19 Classical Guitar (1) | Staff |
| (Fall and spring—as arranged; summer 1969) | |
| 20 Classical Guitar (2) | Staff |
| (Fall and spring—as arranged) | |
| 51 Orchestra (1) | Steiner |
| Preparation and performance of orchestral literature. Prerequisite: audition before Director. | |
| (Fall and spring—evening) | |
| 52 Instrumental Ensemble (2) | Steiner |
| Chamber ensemble groups in addition to orchestra participation. | |
| (Fall and spring—as arranged) | |
| 53 Chorus (1) | Zabawa |
| Preparation and performance of choral literature. Prerequisite: audition before Director. | |
| (Fall and spring—day) | |

54 Chamber Choir (2)

Small vocal groups in addition to chorus participation.
spring—day)

Zabawa
(Fall and

SECOND GROUP

Prerequisite: audition to meet departmental requirements. Required practice: 5 hours a week for one-semester hour courses, 10 hours a week for two-semester hour courses, 12 hours a week for three-semester hour courses.

111 Piano (1)

(Fall and spring—as arranged; summer 1969)

Tolson, Russell

*** 112 Piano (2 or 3)**

(Fall and spring—as arranged)

Tolson, Russell

113 Voice (1)

(Fall and spring—as arranged; summer 1969)

Zabawa, Gieseler

114 Voice (2 or 3)

(Fall and spring—as arranged)

Zabawa, Gieseler

115 Organ (1)

(Fall and spring—as arranged; summer 1969)

Scribner

*** 116 Organ (2 or 3)**

(Fall and spring—as arranged)

Scribner

117 Orchestral Instrument (1)

(Fall and spring—as arranged; summer 1969)

Staff

*** 118 Orchestral Instrument (2 or 3)**

(Fall and spring—as arranged)

Staff

119 Classical Guitar (1)

(Fall and spring—as arranged; summer 1969)

Luse

120 Classical Guitar (2 or 3)

(Fall and spring—as arranged)

Luse

THIRD GROUP**211 Piano (3)**

(Fall and spring—as arranged)

212 Piano (6)

(Fall and spring—as arranged)

213 Voice (3)

(Fall and spring—as arranged)

214 Voice (6)

(Fall and spring—as arranged)

* Only Music majors may elect 3 semester hours of credit

- 215 **Organ** (3)
(Fall and spring—as arranged)
- 216 **Organ** (6)
(Fall and spring—as arranged)
- 217 **Orchestral Instrument** (3)
(Fall and spring—as arranged)
- 218 **Orchestral Instrument** (6)
(Fall and spring—as arranged)

Pathology

Professors T.M. Peery (*Chairman*), W.R. Duryee (*Research--Experimental*),
F.N. Miller, Jr., William Newman, J.C. Smith

Clinical Professors L.E. Zimmerman (*Ophthalmic Pathology*), J.M. Blumberg,
E.B. Helwig (*Dermatologic Pathology*), G.H. Reifstein, N.S. Irey, Robert
Sauer (*Comparative Pathology*)

Professorial Lecturer Mary Jean Matthews

Associate Professors W.L. Marsh, Lois Platt (*Cytology*), Alexander Breslow

Associate Clinical Professors J.S. Howe, V.E. Martens, Theodore Winship, R.E.
Palmer, W.J. Jaffurs

Assistant Professors F.S. Jannotta, S.G. Kent, Suzanne Hammersberg (*Medical
Technology*)

Assistant Clinical Professors W.F. Enos, Cornelia Hoch-Ligeti, L.W. Fix, Grace
Guin, E.H. Zeitler, Marjorie Williams, C.B. Cook, D.R. Parkinson, I.D.
Godwin, M.A. Weinberger, Floris Garner (*Comparative Pathology*), Gloria
Brennan

Clinical Instructor P.W. Lampert

Special Lecturer L.C. Johnson

Bachelor of Science in Medical Technology.—Prerequisite: the Medical Technology
curriculum, pages 77–78.

Required: the general requirements, pages 81–83, including Biological Sciences 112
and additional second-group Biological Sciences courses as recommended, see pages
85–86; and Pathology 115–16, 117–18, 119–20, offered in the University Hospital.

Master of Science in the field of Pathology.—Prerequisite: a Doctor of Veterinary
Medicine degree from a school recognized by the American Veterinary Medical
Association.

Required: the general requirements, pages 89–95. The program of study consists
of thirty-one semester hours of course work distributed as follows: (1) Pathology
201 (eight semester hours), two semester hours selected from any basic medical
science courses. Pathology 283 (four months full-time in hospital-based clerkship
for which the student receives fifteen semester hours of credit); and (2) a thesis
(six semester hours) based on a two-year training period in Veterinary Pathology.
This training period may be taken at either the Armed Forces Institute of Pathology
or the Office of Pathology, National Zoological Park, Smithsonian Institution

**Doctor of Philosophy fields of study in Pathology: Comparative Pathology and
Ophthalmic Pathology.**—See pages 89–93, 95–97, for requirements for the degree.

- 115-16 Introduction to Medical Science** Marsh, Hammersberg, and Staff
(1-1)
Lectures for medical technology students on physiology, pathology, and medicine to accompany Pathology 119-20. (Academic year—1 hour a week)
- 117-18 Principles in Medical Technology** Marsh, Hammersberg, and Staff
(4-4)
For medical technology students. Theories, principles, sources of error of methods used in clinical chemistry, clinical bacteriology, serology, hematology, clinical microscopy. (Academic year—4 hours a week)
- 119-20 Medical Technology Laboratory** Marsh, Hammersberg, and Staff
(10-10)
Rotation through University Hospital pathology laboratories: hematology and urinalysis, 12 weeks; chemistry, 12 weeks; bacteriology and parasitology, 12 weeks; blood bank, 6 weeks; serology, 4 weeks; tissue pathology, 4 weeks. (35 hours a week for 50 weeks)
- *201 Pathology (8)** Staff
Inflammations, degenerations, malformations, trauma, neoplasms. Pathology of organ systems: correlation with symptoms and physical signs. Gross and microscopic study of diseased tissues. Case studies. (Fall—12 hours a week)
- *262 Problems in Experimental Cellular Pathology (1)** Duryce
Cytological and biochemical aspects of cellular function in relation to normal and selected pathological conditions. (Spring—1 hour a week)
- *271 Tissue Reactions to Drugs (1)** Ire
Study of the problems involved in recognizing instances of untoward reaction to therapy. Case presentations. (Spring—1 hour a week)
- 283 Anatomical Pathology Clerkship (5 to 30)** Peery and Staff
Necropsy and surgical pathology service. Prerequisite: Pathology 201. Five semester hours of credit for each 4-week period. Students may receive up to 30 semester hours of credit for 6 months full time. (Fall or spring—as arranged)
- 295 Comparative Pathology (5 to 30)** Garner and Staff
Participation in veterinary pathology service, including wild and domestic animals. Prerequisite: Pathology 201. Five semester hours of credit for each 4-week period. Students may receive up to 30 semester hours of credit for 6 months full-time. Armed Forces Inst. of Path. (Fall or spring—as arranged)
- 398 Advanced Reading and Research (arr.)** Staff
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)
- 399 Dissertation Research (arr.)** Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

* Open to limited number of graduate students, with permission.

Pharmacology

Professor H.G. Mandel (Chairman)

Professorial Lecturers B.B. Brodie, F.E. Hahn

Associate Professors V.H. Cohn, Jr., Paul Mazel, K.S. Kim (Research), S.E.

Fabro (Research), W.R. Jondorf (Research)

Assistant Professors G.A. Hahn (Research), Philip Klubes (Research), J.A. Straw

Instructor Glenna Fitzgerald

Clinical Instructor Gerrit Besselaar

Master of Science in the field of Pharmacology.—Prerequisite: a Bachelor of Arts or Bachelor of Science degree. The undergraduate program must include the following courses or equivalent: Biological Sciences 11–12; Physics 1, 2; Chemistry 11–12, 22, 51–52, 53–54. One year of calculus and a course in physical chemistry are normally recommended but may be taken during the work towards the Master's degree.

Required: the general requirements, pages 89–95, including Biochemistry 221–22; Physiology 201; Pharmacology 201, 299–300. The remaining courses may be selected from Biochemistry 224, 241, 266; Chemistry 156; Microbiology 211, 225, 226, 233; Pharmacology 267, 269, 272, 279, 281, 282, 283.

Doctor of Philosophy fields of study in Pharmacology: *Chemotherapy and Molecular Pharmacology, Physiological Disposition of Drugs, Biochemical Pharmacology, and Drug Evaluation.*—See pages 89–93, 95–97, for requirements for the degree.

201 Pharmacology (8)

Mandel and Staff

Lectures, laboratory, conferences on interaction of drugs and biological systems as a basis for rational therapy of disease. Prerequisite: biochemistry and physiology, or approval of Department. (Fall—day)

203 Fundamental Principles of Pharmacology (2)

Staff

Basic principles of pharmacology, including drug receptor interactions, structure activity relationships, pharmacokinetics, membrane phenomena, cellular control mechanisms, drug toxicity. (Fall—day)

252 Seminar: Clinical Pharmacology (2)

Problems in therapeutics; emphasis on drugs used in treatment of cardiovascular and infectious diseases. Participation in discussions and preparation of lectures. Enrollment limited. (1970–71 and alternate years)

254 Frontiers in Pharmacology (1)

Mandel and Staff

Recent advances and fields of research in pharmacology. Most of the material presented by laboratory scientists from neighboring institutions. (Spring—day)

256 Molecular Pharmacology (2)

F. Hahn

Current theory on action of drugs, especially chemotherapeutic agents, at molecular level. Effect of drugs on biosynthetic processes of the cell with respect to DNA, messenger RNA, transfer RNA, ribosomes, protein, cell wall, and intermediary metabolites. Factors which alter action of drugs, such as drug interactions and resistance. (Spring—day)

258 Cancer Chemotherapy (1)

Mandel and Staff

Mechanisms by which drugs inhibit the growth of tumor cells. (1970–71 and alternate years: spring—day)

- *267 **Pharmacological Research** (arr.) Staff
(Fall and spring—day)
- *269 **Pharmacology Seminar** (1) Staff
Recent advances in pharmacology. (Fall and spring—day)
- 272 **Physiological Disposition of Drugs** (3) Cohn
Fate of drugs in biological tissue. Absorption, distribution, chemical alteration, excretion of drugs; physical, chemical, and biological factors affecting these processes. Limited to 20 students. Prerequisite: Pharmacology 201. (1969-70 and alternate years: spring—day)
- 275-76 **Advanced Topics in Pharmacology I-II** (1-1) Staff
Lectures and seminars on advances in mechanisms of drug action; pharmacology of new drugs; theoretical aspects of pharmacology; laboratory techniques. (1969-70 and alternate years: academic year—day)
- 277-78 **Advanced Topics in Pharmacology III-IV** (1-1) Staff
Continuation of Pharmacology 275-76. (1970-71 and alternate years) Staff
- *279 **Special Topics in Pharmacology** (arr.)
Selected aspects of drug action. (Fall and spring—day)
- 281 **Physiological Techniques in Pharmacology—Lecture** Mazel, Straw
(2)
Physiological techniques for obtaining information on mechanism and site of action of pharmacological agents. Limited to 20 students. Pharmacology 281 may be taken without 282. Prerequisite: Pharmacology 201. (1969-70 and alternate years: spring—day)
- 282 **Physiological Techniques in Pharmacology—Laboratory** Mazel, Straw
(2)
Accompanies Pharmacology 281. Prerequisite: Pharmacology 201. Prerequisite or concurrent registration: Pharmacology 281. (1969-70 and alternate years: spring—day)
- 283 **Biochemical Techniques in Pharmacology** (3) Cohn
Lectures and laboratory. Theory and practice of modern biochemical techniques applicable to study of metabolic fate and mechanism of action of drugs. Prerequisite: Pharmacology 201. (1970-71 and alternate years: spring—day)
- 299-300 **Thesis Research** (3-3) Staff
Required of Master's candidates. (Academic year—as arranged)
- 398 **Advanced Reading and Research** (arr.) Staff
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)
- 399 **Dissertation Research** (arr.) Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit (Fall and spring—as arranged; summer 1969)

* Content differs each time the course is offered; may be repeated once for credit toward a Master's degree.

Philosophy

Professors Thelma Z. Lavine (*Chairman*), R.H. Schlagel
Associate Professors C.H. Pfuntner, W.B. Griffith
Assistant Professor Gerald Donaldson
Assistant Professorial Lecturer Laura Schrenk

Bachelor of Arts with a major in Philosophy (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 76.

Required: in addition to the general requirements, pages 81–85, the passing of the Philosophy major examination at the end of the senior year. The coordinated knowledge upon which the student will be examined is the following: (1) history of philosophy and (2) problems of philosophy. A proseminar (Philosophy 199–200) assists the student in preparing for the major examination.

Master of Arts in the field of Philosophy.—Prerequisite: an undergraduate major in Philosophy at this University or equivalent, as attested by passing this University's major examination in Philosophy; the following courses or equivalent: Philosophy 111, 112, 113, 121, 131, and 152.

Required: the general requirements, pages 89–95. As much as possible of the required course work must be in third-group courses. If second-group courses are elected, students are required to do more intensive and extensive work than undergraduates. A general written examination in two areas of Philosophy and an oral examination in the student's special field are required in addition to a Master's thesis of substantial length.

Master of Arts in the field of Linguistics.—See pages 303–5.

FIRST GROUP

51–52 Introduction to Philosophy (3–3)

Staff

Problems of modern philosophy in relation to scientific and social developments since the Renaissance. *First half:* theories of knowledge. *Second half:* theories of reality. Philosophy 51 or 52 may be taken independently. (Academic year—day and evening; summer 1969)

71 Philosophy and Literature (3)

Lavine

Philosophical foundations of psychoanalytical psychiatry, existentialism, and Marxism and their expression in literature, e.g., in the works of Mann, Kafka, Camus, Sartre, Malraux, Simone, and Koestler. (Spring—day)

SECOND GROUP

111 History of Ancient Philosophy (3)

Donaldson

History of Western philosophy from early Greece to the early Middle Ages. (Fall—day)

112 History of Modern Philosophy (3)

Pfuntner

History of Western philosophy of the 17th and 18th centuries (Descartes to Kant). (Spring—day)

113 19th Century Philosophy (3)

Lavine

European philosophy from Kant to Nietzsche. (Fall—day)

121 Introduction to Logic (3)

Griffith

Systematic study of the principles of valid inference with attention to the development of skill in logical analysis and evaluation of arguments, and to the elementary theory of formal systems. (Fall—day)

- 122 Advanced Logic (3)** Griffith
Theory of logical systems: central metatheorems on consistency and completeness; historical and philosophical import of recent developments. Prerequisite: Philosophy 121 or Mathematics 101, or permission of instructor. (Not offered 1969-70)
- 131 Ethics (3)** Griffith (Spring)
Theories of "the good" and "the right" from Plato to Sartre. —day; summer 1969)
- 132 Social Philosophy (3)** Lavine (Spring—
Social philosophies from Luther to Marxism and Fascism. day)
- 142 Philosophy of Law (3)** Donaldson
Systematic examination of the fundamental concepts of law and jurisprudence; special emphasis on their treatment by contemporary philosophers and jurists. (Spring—day)
- 151 Myth, Science, and the Modern Mind (3)** Schlager
A course in the philosophy of science. Comparison of the mythical and scientific outlook; emphasis on the development and nature of scientific concepts, methodology, and explanation from Copernicus to Einstein. (Not offered 1969-70)
- 152 Knowledge, Truth, and Reality (3)** Schlager
(Formerly Epistemology)
Inquiry into the basis and structure of knowledge, the problem of perception and independent reality, and the meaning and criteria of truth. (Not offered 1969-70)
- 162 Aesthetics (3)** Pfuntner
Nature of aesthetic experience, problems of appreciation and criticism in the arts, and theories of artistic creation. Emphasis on contemporary arts and criticism. (Spring—evening)
- 172 American Philosophy (3)** Pfuntner
Philosophies of Peirce, Royce, James, Dewey, and Santayana as representatives of American thought. (Summer 1969)
- 180 Theories of History (3)** Lavine
Critiques of philosophies of history: the idea of progress, historicism, Hegelian-Marxian dialectic, cyclical, and social-scientific views. Contemporary problems of historical knowledge. (Fall—day)
- 192 Contemporary Philosophy: Analytical (3)** Schlager
The two dominant movements of recent Anglo-American philosophy, logical positivism and British ordinary language philosophy, as represented by G.E. Moore, Wittgenstein, Ryle, Austin, Ayer, etc. (Summer 1969)
- 193 Contemporary Philosophy: Phenomenological (3)** Griffith
(Formerly Contemporary European Philosophy)
The phenomenological movement, including its development into German and French existentialism, and its more recent phases. (Spring—day)

- 199-200 **Proseminar: Readings in Philosophy (3-3)** Staff
 Conferences and group discussions in preparation for field-of-study major examination. (Not offered 1969-70)

THIRD GROUP

- 201-2 **Readings and Research (3-3)** Staff
 Advanced readings and reports. Investigation of special problems.
 (Academic year—as arranged)
- 211 **Seminar: Plato (3)** Donaldson
 Developments of Plato's thought from the early "Socratic" dialogues to the later systematic works. (Fall—evening)
- 216 **Seminar: Kant (3)** Lavine
Critique of Pure Reason. (Not offered 1969-70)
- 231 **Seminar: Ethical Theory (3)** Griffith
 Readings in recent ethical philosophy. (Fall—evening)
- 251 **Seminar: Philosophy of Science (3)** Schlager
 Intensive study of selected problems in the historical and theoretical foundations of science. (1970-71 and alternate years: fall—evening)
- 252 **Seminar: Epistemology (3)** Schlager
 Study of selected problems. (Not offered 1969-70)
- 262 **Seminar: Aesthetics (3)** Pfuntner
 Study of selected problems. (Spring—evening)
- 272 **Seminar: American Philosophy (3)** Pfuntner
 Important American contributions to theories of the self, society, and history. (1970-71 and alternate years: spring—evening)
- 280 **Seminar: Philosophy of History (3)** Lavine
 Current issues concerning the problem of historical knowledge. (1970-71 and alternate years: spring—evening)
- 299-300 **Thesis Research (3-3)** Staff

Physical Education

DEPARTMENT FOR MEN

Professors R.G. Hanken, V.J. DeAngelis (*Chairman*)
 Professorial Lecturer W.D. Thompson
 Assistant Professors C.B. Reed, B.P. Berube, S.J. Korcheck, K.E. Bumgarner,
 R.H. Dahl
 Assistant Professorial Lecturer Martha Jesnak
 Lecturer W.R. Scott

This Department includes all the recognized athletic activities of the men students of the University except intercollegiate athletics. The student furnishes gymnasium uniforms and personal equipment.

DEPARTMENT FOR WOMEN

Professors Elizabeth Burtner, Loretta Stallings (*Chairman*)

Associate Professors Lyndale George, Jeanne Snodgrass, Maida Withers

Associate Professorial Lecturer Evelyn DeBoeck

Assistant Professors Gayle Clapp, Honey Nashman, Nancy Johnson, Martha Bair, Mabel McEwan

Assistant Professorial Lecturer Nan Smith

Instructors Judith Young, Carolyn Baldwin

Lecturers Calva Collier, Barbara Katz

Four semesters of Physical Education (Physical Education 5 or 6) are required for graduation, except for those students exempt under the regulations stated on page 74.

A medical examination is required before participation in physical education activities.

Bachelor of Science in Physical Education.—Prerequisite: the Physical Education for Men or the Physical Education for Women curriculum, pages 78–79. The requirements for the degree are stated on pages 101–2, 115–16.

Within the curriculum leading to the degree of Bachelor of Science in Physical Education there is opportunity for specializing in dance, elementary school physical education, or special physical education.

Bachelor of Arts in Education with (1) a major in secondary education combined with a minor teaching field in Physical Education and (2) a major in elementary education with an area of specialization in Physical Education.—See pages 101–4, 110–11, 114.

Bachelor of Arts in Education with a teaching field in Dance.—Prerequisite: the Education curriculum, page 78.

Required: the Dance option and the professional courses listed on pages 105–6, 114.

Master of Arts in Education with a field in Physical Education (candidates may specialize in dance, elementary school physical education, or special physical education).—See pages 116–19.

The University is not responsible for injuries received in intramural games, or in any of the activities of the departments of Physical Education; and the student assumes full responsibility therefor.

Courses with titles followed by the parenthetical designation (men) are available to men students only; those with titles followed by the parenthetical designation (women) are available to women students only.

FIRST GROUP

*5 Physical Education Activities (1) (men)

Two periods of supervised activity a week. May be repeated for credit not to exceed 4 semester hours. (Fall and spring—as arranged; summer 1969)

*†6 Physical Education Activities (1) (women)

Classes for first-year students meet three periods a week in activities recommended on the basis of the physical education placement test; classes

* A Physical Education fee of \$4.50 a semester is required for registration in one or more of the activity courses.

† Students whose medical examinations indicate the desirability for remedial or restricted activity are assigned to programs especially adapted to their needs.

for second-year students meet two periods a week and are chosen from the activities offered each semester. May be repeated for credit not to exceed 4 semester hours. (Fall and spring—day; summer 1969)

20 Current Health Topics (1) Staff

Lecture and discussion pertinent to the health of today's college student. Guest medical lecturers. (Spring—evening)

41 Personal Health and First Aid (1 or 2) Korcheck

Physical, mental, and social health of the individual—understanding, significance, and promotion. Emphasis on personal health knowledges for the future teacher. First aid training includes Red Cross certification (standard and advanced). (Spring—day)

***43-44 Techniques of Physical Education Activities (1 to 3-1 to 3) (women)** Staff

Development of individual physical and motor abilities; techniques of sports and dance activities. (Academic year—day)

45 Techniques of Physical Education Activities (1 to 3) (men) Staff

Golf, bowling, touch football. Open to nonmajors who have completed 4 semester hours of Physical Education 5 or equivalent. (Fall—day)

46 Techniques of Physical Education Activities (1 to 3) (men) Dahl

Tennis, swimming, wrestling. Open to nonmajors who have completed 4 semester hours of Physical Education 5 or equivalent. (Spring—day)

49 Human Anatomy (3) Stallings

Systematic study of the structure of the human body. Emphasis on neuromuscular mechanisms, cardiovascular system, and neuroanatomy, including conduction pathways. (Fall—day)

50 Kinesiology (3) Berube

Anatomical mechanism of movement, analysis of the action of muscles in movement. Prerequisite: approved course in anatomy. (Spring—day)

51-52 Teaching Physical Education Activities (3-3) (women) Staff

Methods of guiding individual development of physical fitness, motor performance, posture and body mechanics; techniques of teaching individual, dual, and team sports, and dance activities. (Academic year—day)

***56 Dance Technique and Theory (1)** Withers

Advanced work in the techniques of contemporary modern dance. Prerequisite: the introductory and intermediate dance electives offered in Physical Education 6 or equivalent. May be repeated once for credit. (Spring—day; summer 1969—Dance Workshop)

59-60 Teaching Secondary School Team Sports (2 to 4-2 to 4) (men) Bumgarner, Korcheck

Football, basketball, baseball, track and field. (Not offered 1969-70)

* A Physical Education fee of \$4.50 a semester is required for registration in one or more of the activity courses.

SECOND GROUP

- 101 Physical Education in the Elementary School (3)** Snodgrass
For elementary education and physical education majors. Implications of child growth and development for school and playground programs. philosophy, curriculum, techniques of teaching, facilities and equipment, evaluation. (1969-70 and alternate years: fall—day; summer 1969)
- 102 Physical Education Curriculum in the Elementary School (3)** Staff
For physical education specialists. Curriculum for kindergarten and grades 1-6 in physical education activities. Prerequisite: Physical Education 101. (1969-70 and alternate years: spring—evening)
- 103 History and Principles of Physical Education (3)** DeAngelis
History as it relates to contemporary physical education; aims, objectives, and philosophy. (Spring—day)
- 105 Special Physical Education (3)** Nashman
(Formerly *Adapted Physical Education and Physical Examinations*)
Corrective, developmental, and adapted physical education for the handicapped—orthopaedic, neurological, cardiovascular, and mentally retarded. Clinical experience. Prerequisite: Physical Education 49 and 50. (Spring—evening)
- 107 Teaching Recreational Dance (1 or 2)** Burtner
Methods and materials for teaching the folk and social forms of dance (Fall—day)
- 109 Dance Composition I (1 or 2)** Withers
Basic elements and principles of composition. (Fall—day)
- 110 Dance Composition II (1)** Withers
Advanced problems in composition. May be repeated once for credit. (Spring—day; summer 1969—Dance Workshop)
- 111-12 Teaching Physical Education Activities (3-3) (women)** Staff
Techniques of teaching individual, dual, and team sports, and dance activities as needed; methods of coaching and officiating; guidance of school recreation programs. (Academic year—day)
- 113-14 Practice in Teaching Physical Education Activities (3-3)** Staff
Application of principles and techniques in teaching selected sport and dance activities. Supervised experience in instructional and extracurricular programs. (Academic year—day)
- 115-16 Intramural Program Organization (2-2)** Bumgarner
Principles of administration, organization, and supervision in junior high school, senior high school, and college programs. (Academic year—day)
- 117 Teaching Modern Dance (2 or 3)** Burtner
Methods of teaching modern dance: technique, improvisation, and composition. Analysis of accompaniment. Secondary, college, adult levels (1970-71 and alternate years: fall—evening)

- 118 **Dance Production (2 or 3)** Burtner
Planning, choreographing, and staging of dance: demonstrations, concerts, musicals, plays, festivals, lighting, costuming, sets, make-up, accompaniment. (1970-71 and alternate years: spring—evening)
- 119 **Creative Dance for Children (3)** Withers
Exploration and understanding of creative movement for children. Evaluation of methods and materials. Dance for children with special education problems. (Fall—day)
- 120 **Repertory (1)** Withers
Study and performance of completed dance works. Admission by permission of instructor. May be repeated once for credit. (Fall and spring as arranged; summer 1969—Dance Workshop)
- 121 **School and Community Health Programs (3)** Castell*
Health services, healthful environment, health instruction, sources of material for general health knowledge. (Fall—evening)
- 122 **Methods and Materials for Health Education (3)** Stallings
Curriculum planning and organization, methodology, selection and use of materials of health education, evaluation, basic health knowledge. (Spring—day)
- 131 **Tests and Measurements in Physical Education (3)** Reed
Lecture (2 hours), conference (1 hour). Critical survey of tests in physical activities, methods of test construction, elementary statistics. (Fall—day)
- 132 **Camp Leadership (1 or 2)** Clapp
Philosophy and techniques of camp counseling; survey of organization and program including outdoor education. Open to nonmajors. (Spring—day)
- 134 **Rhythmic Analysis through Creative Movement (3)** DeBoeck
Pulse, meter, phrase, simple music notation, and analysis of elementary forms of music composition. Sensory and ideational stimuli, music, poetry, and the visual arts as motivation for improvisation and choreography. Prerequisite: one semester of modern dance or ballet, or equivalent. (1969-70 and alternate years: spring—day)
- 135-36 **Survey of Dance History (3-3)** Burtner
Dance from primitive ritual to contemporary folk, art, and ethnic forms. Practical work in dance included. *First half*: prehistoric to 20th century. *Second half*: 20th century. (1969-70 and alternate years: academic year—evening)
- 138 **Organization and Administration of Physical Education (3)** DeAngelis, George
Organization and administration of elementary, secondary, and college programs. Plants, fields, equipment, and programs. (Fall—as arranged)
- 158 **Safety Education (3)** Bumgarner
Liability, prevention, and emergency care of all types of injuries with reference to first aid and athletics. Proper use of personnel, facilities, and

* Dr. Castell is Assistant Clinical Professor of Medicine in the School of Medicine.

equipment. Red Cross certification as an instructor. Prerequisite: Biological Sciences 11-12. (Spring—day)

164 Physiology of Exercise (3)

Berube

The physiological functions of the body and the effect of exercise on these functions. (Fall—evening)

THIRD GROUP

201 Philosophy of Physical Education (3)

Stallings

Concepts of philosophy and philosophic method applied to objectives, principles, and practice in physical education. (Fall—evening)

202 Motor Learning (3)

Stallings

Physiological and psychological correlates of motor learning with implications for teaching methods and training schedules. (Spring—evening)

211 Problems and Modern Trends in Physical Education (3)

Hanken

Lecture (2 hours), conference (1 hour). For experienced teachers. Organization, supervision, and curriculum problems growing out of current issues; program planning policies; competition. (Summer 1969)

215 Administration of High School Athletics (3)

Millan*

Offered only by the College of General Studies in off-campus centers. Open only to majors in Physical Education. Lecture (2 hours), conference (1 hour). For the prospective high school athletic director. The philosophy, principles, and procedures essential for the administration and development of a sound athletic program. (Fall—evening; summer 1969)

216 Organization and Administration of Physical Education (3)

Staff

Lecture (2 hours), conference (1 hour). Basic concepts of the organization and administration of physical education at the secondary and college levels; human relations and administration presented through the "case method"; actual cases of typical administrative problems analyzed and discussed. (Spring—evening)

220 Problems in Health Education (3)

Jesnak

Lecture (2 hours), conference (1 hour). Health needs, policies and program planning, use of community resources, promising practices in the field. (Fall—evening)

230 Elementary School Physical Education (3)

Snodgrass

For elementary education majors and classroom teachers. Current philosophy, trends, and research; their implications for curriculum, instruction, integration of subject matter, and evaluation. (Summer 1969)

231 Evaluation in Physical Education (3)

Reed

Lecture (2 hours), conference (1 hour). Planning the evaluation program, review of outcomes, analysis of tests and standards, administration and interpretation of tests, guidance. (Summer 1969)

232 Current Issues in Elementary School Physical Education (3)

Staff

Current philosophy, trends, and research; implications for curriculum, instruction, evaluation. (1969-70 and alternate years: spring—evening)

* Mr. Millan is Assistant Professorial Lecturer in Physical Education in the College of General Studies.

- 234 **Organization and Administration of Elementary School Physical Education (3)** Snodgrass
For school administrators, supervisors, principals, and physical education specialists. Curriculum, administrative, and supervisory problems; kindergarten, grades 1-6. (1970-71 and alternate years: spring-evening)
- 241 **Physical Examinations and Correctives (3)** Nashman
Examinations for detection of postural defects, faulty body mechanics, and physical fitness; exercise prescription. Clinical experience. Prerequisite: Physical Education 105 or equivalent. (Spring-evening)
- 242 **Recreation for Special Groups (3)** Staff
Organization and administration of a community-oriented program for the mentally retarded; orthopaedic, neurological, cardiovascular, and other handicapping conditions; culturally deprived. All age groups included. (Spring-evening)
- 250 **Recreation and Outdoor Education (3)** Thompson
Lecture (2 hours), conference (1 hour). Current trends in philosophy, principles, practices, and programs for outdoor education, camping, and community-school relationships. (Fall-evening)
- 258 **Safety Education—Care and Prevention (3)** Millan*
Offered only by the College of General Studies in off-campus centers. Care and prevention of athletic injuries, school safety, first aid, and liability. Leads to Instructor Certification in First Aid. (Spring-evening; summer 1969)
- 261 **Driver and Safety Education I (3)** Scott
History, scope, objectives. Automobile construction and maintenance, traffic accidents, laws, regulations, sound driving practices, responsibilities, and liabilities; emphasis on practice driving laboratory experiences. (Fall-evening; summer 1969)
- 262 **Driver and Safety Education II (3)** Scott
Methods and techniques of conducting programs, pupil and program evaluation, research, planning, organization and instruction in modern approaches, laboratory and direct experiences in the utilization of multiple car and simulator approaches to instruction. (Spring-evening; summer 1969)
- 263 **Basic Simulation—Driver Education (3)** Pitts†
Offered only by the College of General Studies in off-campus centers. Orientation and psychological foundations of simulator instruction. Operation, care, and preventive maintenance; organization and administration of a driver education simulator program. (Spring-evening)
- 264 **Safety Education (3)** Castell‡
Extraneous influences that cause vehicular accidents—such as alcohol, drugs, suicidal tendencies, emotional and psychological factors, medical reasons—and their effects upon driver safety. (Spring-evening)

* Mr. Millan is Assistant Professorial Lecturer in Physical Education in the College of General Studies.

† Mr. Pitts is Lecturer in Physical Education in the College of General Studies.

‡ Dr. Castell is Assistant Clinical Professor of Medicine in the School of Medicine.

- 270 Philosophy of Dance (3)** Burtner
Study of the theories and concepts underlying dance from the 18th century to the present. (1970-71 and alternate years: fall—evening)

- 271-72 Dance Notation (3-3)** Katz
Study of Labanotation. *First half*: leads to elementary certification; effort-shape notation included. *Second half*: intermediate level. Special project: study and reconstruction of notated works of 20th century choreographers of American modern dance. (1969-70 and alternate years: academic year—day)

- 273 Advanced Choreography (3)** Burtner
Advanced problems in creative movement and composition. Choreographing of group and solo works in dance. May be repeated once for credit. (Fall and spring—as arranged; summer 1969)

- 277 Dance Expressions in Selected Cultures (3 or 6)** Burtner
Study of ethnic forms of dance through reading and participation. Study may be done in the United States or the country of the dance being studied. (Fall and spring—as arranged; summer 1969)

- 280 Supervision of Physical Education, Health, and Recreation (3)** George
Purpose, principles, and techniques of supervision. Emphasis on teacher-supervisor communication in curriculum development and improvement of instruction. (Summer 1970 and alternate summers)

- 297 Advanced Topical Studies (3)** DeAngelis, Stallings
Individual studies; critique and synthesis of research findings and of literature. Prerequisite: Education 295. May be repeated once for credit. (Fall and spring—as arranged; summer 1969)

Physics

Professors G.M. Koehl, Herbert Jehle, H.H. Hobbs, Julian Eisenstein (*Chairman*), Otto Bergmann, A.J. Zuchelli

Associate Professor Francisco Prats

Associate Professorial Lecturers H.H. Landon, Jr., Herbert Rabin

Assistant Professors Margaret Montzka, J.M. Harrison, N.K. Khatcheressian, W.C. Parke

Assistant Professorial Lecturer Ronald Andrews

Instructors Mohammad Fatemi, D.R. Lehman

Bachelor of Arts or Bachelor of Science in Physics (Departmental).—Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 76, including Physics 1, 30, 31-32, 51-52; Chemistry 11-12; Mathematics 21, 22, 23, and 24 or 31, 32, and 33.

Required: for the Bachelor of Arts degree and the Bachelor of Science degree: the general requirements, pages 81-85, including Physics 151, 161, 162, 163, 164, 165-66, 167, 168; six hours selected from Mathematics 111, 112, 124, 134, 139, 140, 142; Statistics 97 or Electrical Engineering 51.

Master of Arts in the field of Physics.—Prerequisite: a Bachelor's degree with a major in Physics at this University, or equivalent.

Required: the general requirements, pages 89-95, including Physics 231, 232, 233-34, 235, 236, 291, plus one of the following: Physics 241, 242, 243, 244, 245, or 251-52.

Doctor of Philosophy fields of study in Physics: Experimental Solid State Physics (Behavior of Electrons in Solids, Growth and Perfection of Crystals, Magnetic Properties of Solids at Low Temperatures, Mossbauer Effect), and Theoretical Physics (Biophysics, Elementary Particles, Field Theory, General Relativity, Magnetic and Optical Properties of Solids, Molecular Structure, Nuclear Scattering, Quantum Mechanics).—See pages 89-93, 95-97, for requirements for the degree.

Doctor of Philosophy in the field of Biophysics (an interdepartmental field offered by the departments of Biological Sciences, Physics, and Physiology, see pages 212-15).—See pages 89-93, 95-97, for requirements for the degree.

Bachelor of Arts in Education with a teaching field in Physics.—Prerequisite: the Education curriculum, page 78.

Required: the Physics option and the professional courses listed on pages 111, 114.

Departmental prerequisite: Physics 31-32 or equivalent, and consent of a departmental adviser, are prerequisite to all second-group courses in Physics.

FIRST GROUP

1 General Physics (4)

Staff

Topics in classical physics which form a foundation for modern physics. Prerequisite: two years of college preparatory mathematics or concurrent registration for Mathematics 6. Laboratory fee, \$11. (Fall—day and evening; spring—day; summer 1969)

2 General Physics (4)

Staff

Electricity, magnetism, and selected topics from modern physics. Prerequisite: Physics 1 or equivalent. Laboratory fee, \$11. (Fall—day; spring—day and evening; summer 1969)

9-10 Introduction to Astronomy (3-3)

Hobbs

Lecture (2 hours), laboratory (2½ hours). Classical through modern astronomy with introduction to basic principles underlying astronomical systems and observations. Primarily for nonscience majors. Laboratory fee, \$11 a semester. (Academic year—day)

30 Introductory Modern Physics (4)

Staff

Introduction of concepts in modern physics and laboratory techniques necessary for the more advanced work in Physics 31 through 52. Prerequisite: Physics 1 or equivalent and one semester of calculus. Physics 1 may be waived on the basis of the College Entrance Examination Board Achievement Test or by a departmental examination prior to registration. Laboratory fee, \$11. (Spring—day and evening)

31-32 Introduction to Theoretical Physics (2-2)

Staff

Theoretical structure of physics, emphasis on appropriate analytical techniques. Prerequisite: two semesters of calculus and Physics 30. (Academic year—as arranged)

51-52 Introduction to Experimental Physics (2-2)

Staff

Experiments and lectures on the basic phenomena of physics and techniques of experimentation. Prerequisite: Physics 2 or 30, and two semesters of calculus. Material fee, \$11 a semester. (Academic year—day and evening)

SECOND GROUP

116 Quantum and Solid State Physics (3)

Staff

Concepts in quantum mechanics leading to study of electron behavior in solids. Prerequisite: Physics 32, 52; Mathematics 111. (Spring—evening)

151-52 Intermediate Laboratory (2-2)

Staff

Independent advanced work to introduce student to laboratory and shop techniques and the use of specialized instruments. Prerequisite: Physics 51-52. Laboratory fee, \$11 a semester. (Academic year—as arranged)

161 Mechanics I (3)

Staff

Mechanics of mass points and rigid bodies. Newton's laws, conservation laws, Euler's equations, inertia tensor, small vibrations, and elements of Lagrange's and Hamilton's equations. (Fall—as arranged)

162 Mechanics II (3)

Staff

Basic aspects of elasticity and fluid dynamics, strain tensor, stress tensor, equations of equilibrium, elastic waves, ideal and viscous fluids. (Spring—as arranged)

163 Optics (3)

Staff

Oscillations and waves, energy and momentum of the electromagnetic field, interference, diffraction, geometrical optics, optics of crystals and other media, dispersion. (Fall—as arranged)

164 Thermodynamics (3)

Staff

Basic principles of thermodynamics, reversible changes, applications to simple systems, thermodynamic potentials, phase equilibrium. (Spring—as arranged)

165-66 Electromagnetic Theory (3-3)

Staff

Development of Maxwell's field equations using vector and tensor calculus, electrostatics, stationary and nonstationary phenomena, basic circuit theory, electromagnetic waves and radiation. (Academic year—as arranged)

167 Principles of Quantum Physics (3)

Staff

(Physics 167 and 168 replace former 167-68 Modern Physics)

Experimental background and theoretical basis of quantum mechanics. (Fall—as arranged)

168 Applied Quantum Physics (3)

Staff

(Physics 167 and 168 replace former 167-68 Modern Physics)

Applications of quantum mechanics to statistical mechanics and to atomic, molecular, and nuclear physics. (Spring—as arranged)

170 Elementary Solid State Physics (3)

Staff

Dielectric and magnetic properties of solids, behavior of electrons in metals and semi-conductors, lattice defects. (Spring—evening)

172 Biophysics (3)

Jehle

Biosynthesis of macromolecules: physical basis of nucleic acid replication, transcription, and translation; information theory. Specificity of interaction of cells in reaggregation and morphogenesis. Symmetry in biological organization. (Spring—as arranged)

175 Nuclear Physics (3)

Landon

Structure and stability of atomic nuclei, nuclear transformations and reactions, radiations of nuclei, fission. (Fall—as arranged)

THIRD GROUP

Consent of a departmental graduate adviser is required for admission to all third-group courses in Physics.

231 Electromagnetic Theory: Macroscopic Effects (3)

Staff

Aspects of electromagnetism having to do with fields in the vacuum and in media, their determination in terms of physical boundary conditions and their effects upon charges and matter; definition of field quantities, experimental field relations, solutions for the fields, effects of dielectrics and magnetic media, time dependent solutions, and basic aspects of optics. (Fall—as arranged)

232 Advanced Mechanics (3)

Staff

Analytic methods of mechanics as a basis for modern theory: variational principles, Lagrange's equations, Hamiltonian formulation, canonical transformations, classical perturbation theory, transition to continuum. (Spring—as arranged)

233-34 Quantum Mechanics (3-3)

Staff

General aspects of quantum mechanics with emphasis upon the developmental principles involved. Operators, representations and transformation theory, Schrodinger and Heisenberg pictures, angular momentum, perturbation theory, scattering theory. (Academic year—as arranged)

235 Special Relativity (3)

Staff

Application of relativistic concepts to the basic fields of physics: space and time, tensors and covariant mechanics of point particles, covariant form of electromagnetism, relativistic variational principles, relativistic quantum equations. (1970-71 and alternate years)

236 Electromagnetic Theory: Electrodynamics and Radiative Effects (3)

Staff

Lienard-Wiechert potentials, multipole fields, covariant methods, the self-field problem, and classical radiation theory. (Spring—as arranged)

241 Statistical Mechanics (3)

Atomic configurations under thermodynamic conditions using partition functions and cluster expansion techniques; ideal and nonideal gases; electron plasmas; changes of state. (Fall—as arranged)

242 Atomic and Molecular Structure (3)

Jehle

Structure of atoms and molecules, energy levels, binding energy, optical activity. Hartree and Hartree-Fock equations, spin-effects, rotational and vibrational effects, paramagnetic resonance, chemical binding. (Spring—as arranged)

243 Solid State Physics: Structure and Binding (3)

Eisenstein

Atomic structure of solids and analysis of the binding of crystals. Crystal-line forms and symmetries, atomic vibrations and specific heats, sound and optical propagation, crystalline defects. (Fall—as arranged)

- 244 Solid State Physics: Electronic Processes in Metals (3)** Eisenstein
Phenomena in metals and semi-conductors determined by the electronic states allowed: binding, specific heats, magnetic properties, transport phenomena. Independent particle approximation and many-body aspects are discussed. (Spring—as arranged)
- 245 Quantum Electrodynamics: Theory and Applications (3)** Zuchelli
A presentation of the lower order effects depending upon the quantal nature of the electromagnetic field: Hamiltonian formulation and field quantization, perturbation calculations, Compton effect, photoelectric effect, electron-electron scattering, pair creation and annihilation, indices of refraction, divergence difficulties. (Fall or spring—as arranged)
- 246 Quantum Field Theory (3)** Bergmann
Covariant presentation of general theory of quantized fields, Boson and Fermion fields, theory of S-matrix, dispersion relations, and renormalization program. (Spring—as arranged)
- 247 Nuclear Theory (3)** Prats
Nuclear interactions, nuclear models, theory of nuclear reactions, pion physics and weak interactions. (1969-70 and alternate years: spring—as arranged)
- 248 Elementary Particles (3)** Jehle
Scalar, vector, and spinor fields and their particle aspects, weak and strong interactions, symmetry properties and conservation laws. (As arranged)
- 249 Statistical Processes (3)** Zuchelli
Extension of statistical concepts to irreversible processes. Ergodic behavior, classical and quantum approaches to irreversible effects in large systems, master equations, recurrence paradox and development of thermodynamic concepts. (1970-71 and alternate years)
- 250 Selected Topics in Modern Physics (3)** Staff
Complements the established curriculum by affording formal instruction in topics of immediate interest to the development of physics and in particular to the members of the graduate research group. May be repeated for credit with permission of graduate adviser. (Fall and spring—as arranged)
- 251-52 Laboratory (2-2)** Staff
Individual work on special topics. Laboratory fee, \$11 a semester. (Academic year: Saturdays—as arranged)
- 254 General Theory of Relativity (3)**
Physical principles and mathematical methods underlying Einstein's field equation, geodesic equations of motion, checks of the theory, action principle, conservation laws, perturbation theory, gravitational radiation theory, relativistic cosmology. (Spring—as arranged)
- 291 Seminar (1)** Staff
Individual investigation of special problems. All students registered for Master's degree in physics are expected to attend this seminar during residence for the degree, and to take part in its programs. Credit for participation in the seminar work is obtained during the last two semesters of residence; this credit, however, is based upon the seminar work during the

entire period of residence. May be repeated once for credit. (Fall and spring—as arranged)

299-300 Thesis Research (3-3)

Staff

(Academic year—as arranged; summer 1969)

FOURTH GROUP

398 Advanced Reading and Research (arr.)

Staff

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

399 Dissertation Research (arr.)

Staff

Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Physiology

Professors C.S. Tidball (*Chairman*), R.A. Kenney
 Professorial Lecturer Leonard Laster
 Associate Professors Elizabeth Tidball (*Research*), Marie Cassidy
 Associate Professorial Lecturers P.G. Nelson, Q.L. Hartwig, R.J. Podolsky,
 W.A. Hagins, R.H. Adamson
 Assistant Professors Elizabeth Stephenson, M.J. Jackson
 Assistant Professorial Lecturer W.L. Haskell
 Instructor R.A. Lavine
 Lecturer R.T. Moxley III
 Special Lecturers L.L. Langley, H.J. Zimmerman

Master of Science in the field of Physiology.—Prerequisite: a Bachelor's degree. No major is specified, but the undergraduate program must have included the following courses or equivalent: Biological Sciences 11-12; Chemistry 11-12, 22, 51-52, 53-54; Mathematics 22 or 31; Physics 1, 2.

Required: the general requirements, pages 89-95. In addition to the thesis, the thirty hours of required work should include Physiology 201, 221, 298, and at least three semester hours of research (Physiology 295).

Doctor of Philosophy fields of study in Physiology: Applied Physiology, Cardiovascular Physiology, Cellular Physiology, Endocrine Physiology, Gastrointestinal Physiology, Neurophysiology, Renal Physiology, and Respiratory Physiology.—See pages 89-93, 95-97, for requirements for the degree.

Doctor of Philosophy in the field of Biophysics (an interdepartmental field offered by the departments of Biological Sciences, Physics, and Physiology, see pages 212-15).—See pages 89-93, 95-97, for requirements for the degree.

Departmental prerequisite: Physiology 201 or equivalent is prerequisite to all courses in Physiology numbered above 201.

191 Selected Topics in Human Structure and Function (3)

Kenney

Lecture (2 hours), laboratory (1 hour). Structural and functional basis of physiology. A required course for graduate students who have not had Anatomy 201 or equivalent. Content of this course is on the undergrad-

uate level; students may receive graduate credit on completion of additional work as prescribed by the instructor. Prerequisite: Biological Sciences 11-12 or equivalent and consent of instructor. Open to Columbian College of Arts and Sciences students only with the approval of the student's major adviser. (Fall—day)

201 Physiology (8)

Lecture (8 hours), laboratory (6 hours), conference (1 hour). Cellular, organ system, and applied mammalian physiology. Prerequisite for graduate students: Anatomy 201 or Physiology 191, or equivalent; Biochemistry 201 or 221-22 (Biochemistry 222 may be taken concurrently); or consent of Chairman of Department. Nonmedical students please note that the first meeting of the course occurs one week before the start of University campus classes. Open to Consortium students only with permission of department chairman. (Spring—day)

Staff

221 Seminar (1)

Staff and student presentations from literature. Present work discussed, experimental design and scientific deduction evaluated. Topics to be announced. Prerequisite: a reading knowledge of French or German. Content differs each time the course is offered; may be repeated for credit. (Fall and spring—day)

Stephenson

251 History of Medicine (1)

Survey of the great contributors to physiology and medicine in the context of the times in which they lived and worked. (Fall—day)

E. Tidball

252 Physiological Basis of Sexuality (1)

Conference 1 hour a week. Human reproduction, neonatal changes, contraception, sterility; their implications on patient counseling. (Fall—day)

Staff

253 Clinical Applications of Physiology (1)

Conference 1 hour a week. Emphasis on acid-base and fluid-balance physiology and its relation to clinical problems. (Not offered 1969-70)

C. Tidball

255 Introduction to Electrocardiography (1)

Offered jointly by Department of Physiology and the Public Health Service Instrumentation Field Station. Cardiac electrical activity, means used to record it, application of these principles to diagnosis of cardiac disease. (Fall—day)

Cassidy

259 Introduction to Electron Microscopy (3)

Lecture (2 hours) laboratory as arranged. Basic theory of electron microscopy and its application to biological investigative studies. Limited registration. Admission by permission of instructor. (Not offered 1969-70)

Staff

261 Gastrointestinal Physiology (2)

Lecture or conference 2 hours a week. Physiological approach to such clinical problems as peptic ulcer, malabsorption, ulcerative colitis, hepatitis, and others. (Fall—day)

E. Tidball

262 Cardiovascular Physiology (2)

Lecture or conference 2 hours a week. An overview of cardiovascular physiology at an advanced level. (Not offered 1969-70)

- 263 Endocrine Physiology (2)** Jackson
Lecture or conference 2 hours a week. Basic physiology underlying clinical derangements involving abnormal endocrine functions. (Not offered 1969-70)
- 264 Advanced Physiology of Metabolism (2)** Laster
(Formerly *Introduction to Experimental Medicine*)
Conferences on basic and clinical research which have brought new understanding to disease states characterized by inborn errors of metabolism. (Fall—day)
- 267 Renal Physiology (2)** Kenney
Lecture or conference 2 hours a week. An overview of renal physiology at an advanced level. (Fall—day)
- 271 Electronic Instrumentation (3)** Lavine
Lecture (2 hours), laboratory (2 hours). Fundamentals of electronics and their application to the measurement of physiological phenomena. Prerequisite: Mathematics 22 or 31; Physics 1, 2; and consent of instructor. (Not offered 1969-70)
- 272 Mammalian Radiophysiology (1)** Jackson
Lecture or conference 1 hour a week. Basic physiology of radiation lethality. (1969-70 and alternate years: fall—day)
- 295 Research (arr.)** Staff
By special arrangement with individual Staff members. Approximately 4 clock hours in the laboratory for each semester hour credit. Content differs each time course is offered; may be repeated for credit. (Fall and spring—as arranged; summer 1969)
- 298 Comprehensive Physiology (2)** Staff
Guided review of selected areas of physiology appropriate to the student's graduate program. This course satisfies the requirements for the Master's Comprehensive Examination, the Field Examination for doctoral students minoring in Physiology, and Part I of the Cumulative General Examination in Physiology. Prerequisite or concurrent registration: Physiology 221. (Fall—as arranged)
- 299-300 Thesis Research (3-3)** Staff
- 396 Advanced Reading and Research (2)** Staff
Limited to students preparing for the Doctor of Philosophy general examination. Tutorial literature survey of a subfield of Physiology and of pertinent areas of the candidate's minor field. This course satisfies the requirement for Part II of the Cumulative General Examination in Physiology. (Fall and spring—as arranged; summer 1969)
- 398 Development of Dissertation Problem (2)** Staff
Limited to students preparing for the Doctor of Philosophy general examination. Preparation for written and oral presentation of dissertation problem. This course satisfies the requirement for Part III of the Cumulative General Examination in Physiology. (Fall and spring—as arranged; summer 1969)

399 Dissertation Research (arr.)

Limited to Doctor of Philosophy candidates. May be repeated for credit.
(Fall and spring—as arranged; summer 1969)

Political Science

Professors J.W. Brewer, W.H. Kraus (*Chairman*), Kurt London, R.E. Purcell, H.M. Stout, H.L. LeBlanc, Benjamin Nimer, H.C. Hinton, Andrew Gyorgy
Professorial Lecturers F.M. Riddick, F.L. Hadsel, Bernard Gordon
Associate Professors R.S. Jordan, J.A. Morgan, Jr., C.F. Elliott
Associate Professorial Lecturers Donald Robinson, John Hanessian, Jr., Robert Ellert, M.J. Cazan
Assistant Professors Bernard Reich, D.T. Allensworth, S.J. Wayne
Assistant Professorial Lecturers C.A. Linden, J.D. Stempel
Instructor K.L. Storrs

Bachelor of Arts with a major in Political Science (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, including Political Science 5-6 and Statistics 51 or 53.

Required: in addition to the general requirements, pages 81-85, thirty semester hours of Political Science courses including Political Science 105 and six semester hours from each of Groups A, B, C, and D, listed below. The six semester hours selected from Group A must include Political Science 117 or 118; the six semester hours from Group B must include Political Science 103 or 104 or 122 or 145; the six semester hours from Group C must include Political Science 111 or 112; the six semester hours from Group D must include Political Science 171 or 181 or 182.

Group A: Political Theory, History of Political Thought, and Methodology—Political Science 107, 117-18, 119-20, 141, 160, 198; *Group B:* American Government and Politics—Political Science 103, 104, 121-22, 125, 126, 145, 146, 151, 167, 199; *Group C:* Comparative and Foreign Government and Politics—Political Science 101, 111, 112, 113, 115, 161, 162, 177, 178, 190, 191, 192, 193, 194, 196; *Group D:* International Politics, Law and Organization—Political Science 163, 171, 172, 181-82, 189, 197.

Political Science majors may apply for graduation with Special Honors. In order to be recommended by the Department for Special Honors, students must fulfill the general requirements (see page 48) and must complete with distinction a project of independent study, as demonstrated in a written paper, in addition to the normal credit requirements of particular courses. A committee of the Department will review the paper and make the recommendation for Special Honors.

Students who wish to undertake independent study for Special Honors should register with the secretary of the Department no later than the second week of each semester, and then consult with a member of the Department whose specialized interests lie in the area of the proposed research project. Students registered for Political Science 150 may qualify for graduation with Special Honors by completing with distinction the work connected with their internship.

American Civilization 101 is recommended as a senior-year elective for Political Science majors.

Master of Arts in the field of Political Science.—Prerequisite: a Bachelor of Arts degree with a major in Political Science at this University (or equivalent major elsewhere) with a B average (or better) in the major.

Required: the general requirements, pages 89-95. The thirty hours of required work must be approved in advance by the adviser.

Doctor of Philosophy fields of study in Political Science: American Political Process and Behavior, Comparative Government and Politics, Constitutional Law and Judicial

Politics, International Law, International Politics, International Organization, Political Theory (Normative and Empirical), State and Urban Politics, The Presidency and the Administrative Establishment, U.S. Foreign Policy; and Politics of Latin America, Soviet Union, Eastern Europe, Western Europe, Far East, South and Southeast Asia, Africa (south of Sahara), Middle East.—See pages 89–93, 95–97, for requirements for the degree.

Doctor of Philosophy fields of study in International Relations combine work in Economics, History, and Political Science.

Bachelor of Arts in the field of International Affairs.—See page 363.

Bachelor of Arts with a major in Latin American Studies with optional emphasis in Political Science (Interdepartmental).—See page 301.

Bachelor of Arts in the field of Public Affairs (Politics Option).—See page 363.

Master of Arts in the field of International Affairs.—See pages 363–64.

Master of Arts in the field of Latin American Studies with optional emphasis in Political Science (Interdepartmental).—See pages 301–2.

Master of Arts in the field of Public Affairs with a specialization in Domestic Politics.—See page 364.

Departmental prerequisite: Political Science 5–6 is prerequisite to all second-group courses in Political Science.

FIRST GROUP

5–6 Introduction to Political Science (3–3)

Staff

First half: structure, powers, and processes of the American political system—Congress, the President, and the Supreme Court; elections, political parties, and pressure groups; state and local government. Second half: nature and study of politics—theories, forms, and processes of political systems; international relations and political ideologies. (First half: fall—day; spring—evening; summer 1969. Second half: fall—evening; spring—day; summer 1969.)

SECOND GROUP

101 Far East in the Modern World (3)

Michael

General character of Far Eastern societies and their response to the impact of America, Europe, and Russia; American policy in the Far East and the influence of world communism. (Fall—day; summer 1969)

103 Metropolitan Government and Politics (3)

Allensworth

Political changes and processes in metropolitan areas; emphasis on regional and sub-regional governmental institutions. (Spring—day; summer 1969)

104 State and Local Governments (3)

Allensworth

State and local government forms, policies, and practices. Theory of decentralization of governmental functions. Significance of intergovernmental relations. Comparative state and local political systems and their social and economic foundations. (Spring—day)

105 Scope and Methods of Political Science (3)

Wayne

Development of the discipline to its present state; major approaches to the study of politics; empirical methods of political research. (Fall and spring—day)

- 107 Problems in Modern Political Thought (3)** Elliott, Kraus
Development of democratic political institutions and analysis of main ideological changes during the 19th and 20th centuries. Emphasis on the rise of socialism and communism. (Spring—day; summer 1969)
- 111 Comparative Government and Politics (3)** Stout, Elliott, Gyorgy
Introduction to the government and politics of the principal constitutional democracies of Western Europe: Great Britain, France, and the Federal Republic of Germany; secondary reference to other West European systems and the communist government of East Germany. (Fall—day and evening; summer 1969)
- *112 Comparative Government and Politics (3)** Stout, Elliott, Gyorgy
Introduction to the government and politics of the communist nations; emphasis on the Soviet Union and the countries of Eastern Europe. (Spring—evening)
- 113 Political Problems of the British Commonwealth (3)** Stout
From Colonial Empire to modern Commonwealth: questions of equal partnership; governments and policies in principal Commonwealth states; problems of new states in Asia and Africa. (Not offered 1969–70)
- *115 Government and Politics in Eastern Europe (3)** Gyorgy
Study of the contemporary social and ethnic structures, governmental systems, and international position of the East European satellites. Emphasis on the post-World War II political evolution and present status of Soviet satellite nations. (Not offered 1969–70)
- 117–18 Political Theory: Nature and Growth of Western Political Thought (3–3)** Kraus
First half: foundations of Western political thought with emphasis on classical antiquity; Western political tradition. *Second half:* the Renaissance and Reformation to recent times. Theoretical foundations of the modern state: morals and politics, sovereignty, absolutism, obedience, and resistance; liberalism, democracy, conservatism. (Academic year—day; summer 1969—Political Science 118)
- 119–20 American Political Thought (3–3)** Brewer, Morgan, Allensworth
Introduction to political thought in the United States from colonial times to the present. (Academic year—day; summer 1969—Political Science 119)
- 121–22 U.S. Constitutional Law and Politics (3–3)** Morgan
First half: separation of powers, federal-state relationships, economic regulation. *Second half:* political and civil rights. (Academic year—day; summer 1969—Political Science 121)
- 125 Legislative Organizations (3)** Riddick
Congress: constitutional aspects, legal analysis of make-up, political organization. Political and parliamentary procedures used in the preparation and enactment of legislation. (1970–71 and alternate years)

* Political Science 112, 115, and 161 are related in their subject matter, and credit for only one of the three may be applied toward a degree.

- 126 The American Presidency (3)** Wayne
Role of the Presidency in public policy formulation; development of the institution; the selection process; emphasis on legislative-executive relations. (Fall—day; summer 1969)
- 141 Development of Legal Institutions (3)** Brewer
Introduction to historical jurisprudence; primary attention to the origins of Roman Law of Continental Europe and of Anglo-Saxon Common Law. (Spring—day)
- 145 Political Parties and Politics (3)** LeBlanc, Robinson
Organization and operation of political parties in the United States: party system and structure, role of ideology, voting behavior, campaigns and elections, devices for organizing the government. (Fall—evening; spring—day; summer 1969)
- 146 Political Pressures and Public Reactions (3)**
Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy. (Spring—day)
- 150 Internship in Politics (3)** Wayne, Robinson
Study of the political process in action by assignment to a congressional, state, or local government office to pursue a specific research project. Admission by selection of a departmental committee, with priority given to seniors majoring in Political Science. Papers judged meritorious qualify students for Special Honors in Political Science. (Fall and spring—as arranged)
- 151 Public Administration (3)** Allensworth
Theory and practice of governmental administration and its relation to other public and private organizations and interests; introduction to organization theory and behavior. (Fall—day)
- 160 Modern Communist Ideologies (3)** Elliott
Intensive study of 20th century communism; emphasis on its antecedents and possible evolution. Backgrounds, careers, and ideas of leading communist figures: Marx, Lenin, Stalin, Khrushchev, and Mao. (Summer 1969—offered only in Communist Affairs program)
- 161 Soviet Government and Politics (3)** Gyorgy
Analysis of influences in the formation of the Soviet system under Lenin, Stalin, and Khrushchev; the Soviet Communist Party; government and mass organizations; selected aspects of economic, cultural, social, and foreign policy. (Summer 1969)
- 162 Government and Politics of China (3)**
The Chinese Revolution: Chinese tradition, modern Chinese history, Marxism-Leninism, and Soviet influence; the rise of the Communist Party of China. Principal power structures: party, bureaucracy, armed forces, police. Major domestic and foreign objectives and policies. Students cannot receive credit for both Political Science 162 and 194. (Not offered 1969-70)

* Political Science 112, 115, and 161 are related in their subject matter, and credit for only one of the three may be applied toward a degree.

- 163 Soviet Foreign Policy (3)** Elliott
Relations with United States, Third World, China; international communism; disarmament policy; instruments of foreign policy; interrelationships of domestic and foreign policies; ideology and foreign policy. (Fall—day; summer 1969)
- 167 U.S. Foreign Policy (3)** Reich
Constitutional and political factors that determine the formulation, execution, and substance of U.S. foreign policy. (Fall—day)
- 171 International Politics (3)** Reich, Jordan, Storrs
International actors, international and domestic environments of foreign policy, global and regional patterns, general characteristics of foreign policy. (Fall—day and evening; spring—day; summer 1969)
- 172 International Organization (3)** Jordan
Development and operations of the United Nations, regional organizations, and functional international organizations. (Spring—day and evening)
- 177 Governments and Politics in Latin America (3)** Storrs
Political processes and institutions in Latin America; emphasis on Argentina, Brazil, Chile, and Mexico. (Fall—day; spring—day and evening; summer 1969)
- 178 Latin America: Political Patterns and International Relations (3)** Storrs
Patterns of political development, foreign policies of selected states, inter-American diplomacy and organization, United States-Latin American relations. (Spring—day)
- 181-82 Public International Law and Organization (3-3)** Brewer
Survey of the public law of nations. *First half:* emphasis on the law of peace. *Second half:* attention to neutrality and the so-called law of war. (Academic year—day; summer 1969—Political Science 181)
- 189 African International Politics (3)** Nimer
Analysis of interstate relations in Africa and of selected aspects of African relations with the outside world. (Spring—day; summer 1969)
- 190 Politics of Middle and Southern Africa (3)** Nimer
Comparative analysis of the political systems of selected countries of non-Mediterranean Africa. (Fall—day; summer 1969)
- 191 Governments and Politics of the Middle East (3)** Reich
Domestic and international politics of the eastern Arab states, Turkey, Iran, and Israel. (Fall—day)
- 192 Governments and Politics of North Africa (3)** Reich
Domestic and international politics of Algeria, Tunisia, Morocco, Libya, Egypt, Sudan; their relations with states of the Middle East. (Spring—evening)
- 193 Governments and Politics of South and Southeast Asia (3)** Purcell, Hinton
Domestic and international politics of the major states in the area, particular reference to India. (Fall—evening)

- 194 Governments of China and Japan (3)** Michael
Institutions and processes of government in contemporary China and Japan, with some historical background. Attention to ideological forces. Students cannot receive credit for both Political Science 194 and 162. (Spring—evening; summer 1969)
- 196 Problems of Modern Political Leadership (3)**
Lectures and discussions on problems of political leadership in developing states. (Not offered 1969–70)
- 197 Proseminar: International Affairs (3)** Purcell, Reich, Storrs
Diplomatic, economic, psychological, military problems of U.S. foreign policy. Readings, term papers, discussion. Primarily for seniors in the International Affairs curriculum; open to a limited number of other qualified students. (Fall—day; spring—evening)
- 198 Contemporary Trends in Political Science (3)**
Lectures and discussions emphasizing recent developments of research and theory applicable to developing states. (Not offered 1969–70)
- 199 American Government and Politics (3)** LeBlanc
Proseminar: reading and research as a basis for analyzing significant problems. Open to seniors in Public Affairs and Political Science curricula. (Spring—day; summer 1969)

THIRD GROUP

Graduate reading courses and seminars may vary in theme from year to year and may be repeated for credit with the approval of the student's adviser and the consent of the instructor.

- 201 Seminar: Scope and Methods of Political Science (3)** Wayne
Reading and research. (Fall—evening)
- 203–4 State and Local Governments (3–3)** Allensworth
First half: readings and group discussions on the process of politics at state and local levels. *Second half:* advanced research in selected topics of state and local politics. (Academic year—evening)
- 209 Seminar: the American Presidency (3)** Wayne
Reading and research on the institutionalized features of the American Presidency; emphasis on the politics of the Executive Branch. (Spring—evening)
- 210 Seminar: the American Congress (3)** Robinson
Reading and research on the Congress of the United States. (Fall—evening)
- 211 Readings in Comparative Government and Politics (3)** Stout
Methodological questions: comparative political processes and systems; some attention to legislatures, executives, parties, public services, the role of the military. (Fall—day)
- 212 Seminar: Comparative Government and Politics (3)** Stout
Selected topics in comparative political institutions and politics. Each semester is devoted to a selected country or significant institutional or pol-

icy problem. Attention is directed to questions of method. (Spring—day)

215-16 Seminar: the Communist Camp in World Politics I-II (3-3) London

First half: significant issues of communism, particularly in the Soviet Union and Red China; concept and structure of "world socialist system"; intra-Bloc relations with emphasis on the Sino-Soviet dispute. Prerequisite: 3 semester hours in modern political theory. *Second half:* political ramifications of the communist movement and its relations with the non-communist world. Prerequisite: 3 semester hours in international relations or comparative government. (Academic year—day)

217 Readings in Political Theory (3) Kraus

Readings and group discussions, principally on modern political and constitutional theory since the 17th and 18th centuries. (Fall—evening)

218 Seminar: Topics in Political Theory (3) Kraus

Research and discussion on problems of modern political and constitutional theory; theoretical aspects of representative government, democracy, socialism, totalitarianism. (1969-70 and alternate years: spring—evening)

221-22 The United States Constitution and the Judicial Function (3-3) Morgan

First half: readings and group discussions on constitutional law and politics. *Second half:* seminar on selected topics of constitutional law and judicial behavior. (Academic year—evening)

224 Readings in Socialism and Communism (3) Kraus

Readings of primary and secondary works ranging from pre-Marxian and Marxian socialism to contemporary Marxism-Leninism. Prerequisite: 3 semester hours in modern political theory. (Fall—day)

225 Seminar: Marxism-Leninism (3) Kraus

Crucial theoretical problems, such as the nature of revolution, dictatorship of the proletariat, transition to communism, imperialism, and national liberation in Marxian and contemporary communist doctrine. Prerequisite: Political Science 224 or permission of instructor. (Spring—evening)

227 Seminar: Governments and Politics of Eastern Europe (4) Gyorgy

Comparative study of principal political, social, economic institutions; Soviet stake; patterns of Soviet domination; efforts toward economic and political integration; impact of the Sino-Soviet dispute; U.S. policy toward satellite nations. Workshop: Eastern Europe in world affairs. (Not offered 1969-70)

229 Readings in Soviet Government and Politics (3) Elliott

Readings in contemporary Soviet domestic government and politics. Prerequisite: 3 semester hours selected from History 146, Political Science 112, or equivalent. (Fall—evening)

230 Seminar: International Communism (3) Metzl

Full semester: emphasis on operational techniques. *Spring semester:* case studies. Students may receive credit for the fall semester and also the spring semester, but neither semester may be repeated for credit. (Fall and spring—evening)

***231 Seminar: Sino-Soviet Relations (3)**

Michael

Background, development, and status of conflict within the communist movement; emphasis on the role of Chinese communists. Prerequisite: 3 semester hours selected from History 187; Political Science 101, 194; or equivalent. (Spring—day)

232 Seminar: International Communications (3)

Dasbach

East-West perspectives. Theory and history of national patterns of international communications focusing on basic political and psychological aspects of communication between major communist and noncommunist powers. (Spring—day)

233 Seminar: Soviet Government and Politics (3)

Elliott

Research seminar in selected problems of Soviet domestic government and politics. Emphasis: since Stalin. Prerequisite: Political Science 229 or consent of instructor. (Spring—evening)

234 The Soviet Political Process (3)

Ploss

Influence of revolutionary ideas, traditions, and accidental events on Soviet organization, and on administration of Soviet social, economic, national, and military policies; application of these policies by leaders to maintain power. (Fall—day)

235-36 City and Regional Planning Processes (3-3)

Allensworth

(Replaces former Political Science 235 *Metropolitan Government and Politics* (3))

Examination of city and regional planning and land use processes. Role, significance, and nature of responsibilities of comprehensive and functional area planning agencies and organizations at the local, sub-regional, and metropolitan levels. Strategies of administrators and other participants in metropolitan planning decision making. Economic, social, political, and administrative influences on land use and planning in the metropolitan area. *First half*: reading and group discussion. *Second half*: advanced research. (Academic year—evening)

†237 Chinese Law (3)

Hsia

Emphasis on the legal system of Communist China; analysis of the constitutional law of the People's Republic of China, including general principles, state structure, and rights and duties of citizens; a brief survey of the administration of justice—courts, procuratorates, and lawyers; marriage law; land law; counterrevolutionary act and other criminal statutes; principles of civil law; communist Chinese concept of international law. (Spring—evening)

‡238 Soviet Law (3)

Ramundo

Concept of "socialist legality"; legal relationship of individual to state and other participants in Soviet society; role of Party in Soviet legal system; Soviet philosophy of law; state (constitutional) law; Soviet federalism; governmental apparatus, rights and obligations of citizenship; criminal law;

*Offered jointly by the departments of Political Science and History.

†Same as Law 547 (2). Graduate students registering for Political Science 237 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.

‡Same as Law 546 (2). Graduate students registering for Political Science 238 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.

property law; labor law; selected topics in civil law and procedure; international law. (Fall—as arranged)

245-46 The American Political Process (3-3)

LeBlanc

First half: readings and group discussions on the nature and functions of political parties and the role and techniques of political interest groups. *Second half:* seminar on selected topics of American politics. (Academic year—evening)

253 Seminar: Chinese Government and Politics (3)

Michael

Political institutions and concepts in late imperial times, during the revolution, under national government, and under communism. Emphasis on the communist period. Prerequisite: 3 semester hours selected from History 187; Political Science 101, 194; or equivalent. (Fall—day)

254 Colloquium: Modern China (3)

Michael

Interuniversity research colloquium of faculty members of the Institute for Sino-Soviet Studies and other area universities from different disciplines concerned with the study of modern China. Critical discussions of research plans and studies in progress in weekly sessions. Advanced graduate students admitted with permission of faculty group. (Fall and spring—day)

255 Colloquium: Russia and Eastern Europe (3)

London, Gyorgy

Interuniversity research colloquium of faculty members of the Institute for Sino-Soviet Studies and other area universities from different disciplines concerned with the study of Russia and Eastern Europe. Critical discussions of research plans and studies in progress in weekly sessions. Advanced graduate students admitted with permission of faculty group. (Fall and spring—day)

257 Seminar: Communism in Developing Countries (3)

Examination of international communist policy for, and communist parties in, developing countries. Case studies of Asia, Africa, and Latin America. Basic communist concepts of imperialism and nationalism; development and current application of Soviet and Chinese variants of strategy and tactics for "national liberation." (As arranged)

258 Seminar: Communist Parties in the Noncommunist World (3)

Movements and ideological variations of communist parties of France, Italy, the Scandinavian countries, and other Central and West European nations. Case studies on communist problems of Middle East and North African nations. (As arranged)

265-66 Chinese Communist Policy Processes (3-3)

Hinton

Determinants of policy, view of the world, instrumentalities and locus of power, interrelationship between domestic and foreign policy, formulation and implementation of policy. Prerequisite to Political Science 265: 3 semester hours selected from Political Science 101, 194, or equivalent. Prerequisite to Political Science 266: Political Science 265 or equivalent. *First half:* readings. *Second half:* research seminar. (Academic year—evening)

267 Seminar: U.S. Foreign Policy (3)

Purcell

Research and selected reading as the basis for an analysis of the foreign policy of the United States, with particular reference to the decision-making process and the execution of policy. (Fall—day)

- 268 Seminar: Comparative Foreign Policies (3)** Stout
Research and selected reading as the basis for an analysis of the foreign policies of major powers, with particular reference to the decision-making process and the execution of policy. (Spring—evening)
- 269 Seminar: Soviet Foreign Policy (3)** Elliott
External policies and relations of the USSR; world objectives of Soviet leaders; relations with other communist states, Western powers, and other countries; international propaganda, disarmament policy, foreign economic relations. Prerequisite: 3 semester hours selected from History 137, 145-46, or equivalent. (Spring—evening)
- 270 Political and Social Institutions of Eastern Europe (3)** Gyorgy
Major political and social factors which have shaped the inter-war, World War II, and post-war evolution of Eastern Europe. Emphasis on sociological and anthropological forces which have contributed to "Balkanization" of this area in the last fifty years. Each time the course is offered the concentration will be on one or two selected countries. (Not offered 1969-70)
- 271-72 Problems in International Organizations (3-3)** Jordan
First half: analysis of the political dimension of international organizations; special reference to the United Nations. *Second half:* examination of the operational and administrative aspects of international organizations; special reference to regional and functional bodies. (Academic year—evening)
- 273 Public Opinion and Foreign Policy (3)**
Development, organization, and operation of international information programs by major world powers. U.S. public opinion influencing foreign policy formation and conduct. (Spring—day and evening)
- 274 Principles and Problems of International Political Communication (3)** Dasbach
Reading and discussion of public opinion foreign policy relationships and operation of international political communication programs by major world powers as a tool of foreign policy. (Fall—day)
- 275-76 International Politics (3-3)** Nimer
First half: reading and discussion of recent and older works of theoretical significance. *Second half:* individual research on and class discussion of selected international political topics. Attention in each half to both factual and value problems. (Academic year—day and evening)
- 277-78 Seminar: Latin American Politics (3-3)** Storrs
First half: readings and discussions on Latin American political processes and institutions. *Second half:* individual research and class discussion on selected topics of Latin American politics. (Academic year—evening)
- *280 Vietnam: Causes and Prospects (3)** White, Gordon
An interdisciplinary, area-centered approach, with primary stress on the causes of the war, but with attention also to the future of Southeast Asia as a whole. (Spring—day)

* An interdepartmental course offered by the departments of Political Science and Psychology.

281-82 Seminar: Public International Law (3-3)

Brewer

Research in the public law of nations, with special attention to problems of pacific settlement, sanctions, war, neutrality, and state jurisdiction, and to their political implications. (Academic year—day)

283 Topics in International Law (3)*284 Seminar: Comparative Communist Systems (3)**

Staff

A comparative examination of the major characteristics of communist systems—party history, structure, foreign policy, psychological influences, ideology, and modernization. Emphasis on methodological problems in comparative communist politics. (Spring—day)

285 Diplomacy since World War II (3)*287 Seminar: Problems in Latin American Civilization (3)**

Rodriguez

Interdisciplinary seminar, guided by a specialist in the methodology of his chosen discipline; each student writes a report on some aspect of a key theme (i.e., Nationalism) in Latin America's experience. Admission by permission of instructor. (Spring—day)

288 Seminar: Soviet Military Policy and Strategy (3)

Kolkowicz

Soviet developments in military policy and strategy with attention to intra-Bloc military cooperation, political context of Soviet military policy, significant changes in recent Soviet military thought. (Fall—evening)

290 Topics in African Politics (3)

Nimer

Reading, research, and discussion of selected aspects of African domestic and international politics. (Spring—evening)

291 Governments and Politics of the Middle East (3)

Reich

Reading and research in selected problems in the government and politics and international relations of the Middle East. (Fall—evening)

292 Governments and Politics of North Africa (3)

Reich

Reading and research in selected problems in the government and politics and international relations of North Africa. (Spring—evening)

293 Seminar: Governments and Politics of South and Southeast Asia (3)

Purcell

Research and selected reading as basis for analysis of structure, problems, and policies of the governments of selected countries in the area, with particular reference to India. (Spring—evening)

294 Seminar: Governments and Politics of Japan and Korea (3)

Readings, research, and discussion on the contemporary political problems and relevant historical background of Japan, North and South Korea. (As arranged)

295 **Seminar: Chinese Communist Foreign Policy (3)** Hinton
Objectives; formulation and implementation of foreign policy; Communist China as Asian state, revolutionary influence, would-be power. Prerequisite: 3 semester hours selected from Political Science 101, 194, or equivalent. (Spring—day)

296 **Seminar: the Communist Role in Far Eastern International Politics (3)** Hinton
Evolution of communist strategy for Asia, armed struggle in South and Southeast Asia, wooing of national bourgeoisie, development of Asian communist states, local communist parties since World War II, Sino-Soviet rivalry. (Fall—evening)

297 **Independent Studies (arr.)** Staff
Limited to Master's candidates. Permission of instructor, in writing, required. (Fall and spring—as arranged; summer 1969)

298 **Southeast Asia in World Politics (3)** Gordon
Southeast Asia in great-power perspective. Overlapping and conflicting interests, foreign policies, and military requirements of the United States, Japan, China, and the USSR. Balance-of-power concept and development of Asian subsystem. (Spring—evening)

299-300 **Thesis Research (3-3)** Staff
(Academic year—as arranged; summer 1969)

FOURTH GROUP

398 **Advanced Reading and Research (arr.)** Staff
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

399 **Dissertation Research (arr.)** Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Psychology

Professors Thelma Hunt (*Emeritus*), E.L. Phillips, J.N. Mosel, B.I. Levy (*Chairman*), W.E. Caldwell, R.D. Walk, R.K. White, Gardner Murphy (*Visiting*)
Professorial Lecturers Margaret Ives, W.A. McClelland
Associate Professors C.E. Tuthill, Eva Johnson, Virginia Kirkbride, Jacqueline Goodnow, M.L. Meltzer, R.R. Bonato (*Research*), R.H. Tanck (*Research*), D.E. Silber, Charles Rice
Adjunct Associate Professor C.J. Lange
Associate Professorial Lecturers R.K. Kahn, J.B. Margolin
Assistant Professors Lois Hammer, W.B. Rucker, Eugene Abravanel, R.W. Holmstrom (*Visiting*)
Lecturers S.L. Cohen, S.S. Smith

CLINICAL TRAINING STAFF

Associate Clinical Professors Katharine Beardsley, Elizabeth Broomhead, A.M. Rochlin, Donald Jewell, S.B. Kopp, I.M. Zimmerman
Assistant Clinical Professors Alice Adams, Andrea Doman, J.M. Smothers, S.A. Fagen

Bachelor of Arts with a major in Psychology (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, and Psychology 1 and 5, or 1 and 6, or 5-6. The general requirements for the degree are stated on pages 81-85. The sixty required semester hours, in addition to those taken as prerequisites, must include twenty-four hours in second-group Psychology courses, including Psychology 196 and one course from each of the following groups—Group A: Psychology 118, 121, 161; Group B: Psychology 115, 151, 156; Group C: Psychology 112, 129, 131, 144. Statistics 53 or 104, or an appropriate course in mathematics, is required.

Master of Arts in the field of Psychology.—Prerequisite: the degree of Bachelor of Arts with a major in Psychology at this University, or equivalent.

Required: the general requirements, pages 89-95. Of the twenty-four required semester hours (exclusive of the thesis), a minimum of eighteen must be in third-group Psychology courses including Psychology 202 and either 203 or 204; six may be in related fields approved by the Department.

Master's programs are available in the following fields of concentration: (1) tests and measurements, (2) psychopathology (abnormal), (3) social, (4) personnel, (5) experimental, (6) personality, (7) experimental comparative, and (8) developmental. For detailed requirements consult the Chairman of the Department.

Doctor of Philosophy fields of study in Psychology: Psychology (Clinical, Comparative, Developmental, Experimental, Social), and Psychometrics.—See pages 89-93, 95-97, for requirements for the degree.

Master of Arts in the field of Linguistics.—See pages 303-5.

Master of Arts in Education in the fields of Employee Development, Guidance, and Student Personnel Work in Higher Education.—Prerequisite: a Bachelor's degree from an accredited institution and two years of successful teaching experience. See pages 116-19.

Master of Arts in Government in the field of Personnel Administration.—See pages 136-39, 144.

Master of Business Administration in the field of Personnel Administration.—See pages 136-40, 142.

Master of Public Administration in the field of Personnel Administration.—See pages 136-39, 142, 143.

Students electing Psychology courses in the freshman year should begin with Psychology 1; with permission of instructor students may elect Psychology 5-6 in the freshman year.

Departmental prerequisite: Psychology 1 or 5 or 6 is prerequisite to all other courses in Psychology. Six semester hours in Psychology courses are prerequisite to all second-group courses in Psychology.

FIRST GROUP

1 General Psychology (3)

Fundamental principles underlying human behavior.
 —day and evening; summer 1969

Staff
 (Fall and spring)

5-6 Principles and Methods of Psychology (3-3)

Lecture (2 hours), laboratory (2 hours). An experimental approach to understanding behavior; individual and class experiments performed.

Walk, Hammer
 First

half: awareness, discrimination, sensation, perception, and emotions and their relation to adaptive behavior. *Second half*: topics of motivation, learning, memory, and problem solving. (*First half*: fall—day and evening. *Second half*: spring—day.)

- 8 **Psychology of Motivation and Personality** (3) Tuthill, Silber, Rice
Introduction to the psychology of personality. Principles of motivation, personality development, social and cultural factors, and assessment and description of personality emphasized. (Fall and spring—day and evening; summer 1969)

- 22 **Introduction to Educational Psychology** (3) Kirkbride
Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training. (Fall and spring—day; summer 1969)

- 29 **Psychology of Childhood** (3) Johnson
Developmental approach to study of the child. Emphasis on the socialization process, learning, and the child's view of the world. (Fall—day; spring—evening; summer 1969)

SECOND GROUP

- 101 **Abnormal Psychology** (3) Hunt, Meltzer, Silber, Rice
Causes, diagnosis, treatment, and prevention of various types of maladjustments and mental disorders. Prerequisite: 6 semester hours in psychology, or 3 in psychology and 6 in a biological science. (Fall and spring—day and evening; summer 1969)

- 110 **Cognitive and Perceptual Development** (3) Abravanel
Concepts and research in the area of developmental psychology; emphasis on the growth and development of perception, cognition, and language. (Spring—day; summer 1969)

- 112 **Psychology of Adolescence** (3) Johnson
Psychological characteristics and problems peculiar to adolescence, with emphasis on applications of psychology to solution of such problems. (Fall—day)

- 115 **Psychology of Language and Communication** (3) Mosél
Introduction to psycholinguistics and verbal behavior. Information theory, measurement of meaning, cultural and linguistic structures in the perception and learning of language. (Fall—day; summer 1969)

- 118 **Physiological Psychology** (3) Rucker
Basic structure and functions of sensory systems, motor systems, central nervous system, autonomic nervous system, and endocrine system, with emphasis on the relations between physiological functioning and behavior. (Fall and spring—day; summer 1969)

- 121 **Psychology of Learning** (3) Hammer, Rucker
Current learning theories and issues. (Fall—day; summer 1969)

- 129 **Motivational Factors in Personality** (3) Kirkbride
Survey of basic principles and assessment techniques, with emphasis on applications to counseling. (Fall—day; summer 1969)

131 Psychological Tests (3)

Hunt

Survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, \$7.
(Fall—day; spring—evening; summer 1969)

144 Personnel and Industrial Psychology (3)

Mosel

Psychological concepts and methods applied to problems of personnel management, human engineering, employee motivation, and productivity.
(Fall—evening; spring—day)

145 Psychology of Management (3)

Cohen

Primarily for students in the schools of Engineering and Applied Science and Government and Business Administration. Introduction to principles of industrial organizations and personnel selection. (Fall and spring—evening; summer 1969)

151 Social Psychology (3)

Tuthill, White

Social foundations of attitudes and behavior: cognition, motivation, role-behavior, communication, small-group processes, racial attitudes, nationalism, and war. (Fall—evening; spring—day; summer 1969)

156 Psychology of Attitudes and Public Opinion (3)

Tuthill

Psychology of opinion formation, measurement of opinion, social determinants of attitudes, psychological processes in propaganda, bases of receptivity of propaganda, psychological warfare. (Spring—evening; summer 1969)

161 Comparative Psychology (3)

Caldwell

Lectures and demonstrations on animal psychology. Psychological processes in infrahuman organisms, evolution of behavior, the place of animal experimentation, and research in psychology. (Spring—day)

191 Independent Research in Psychology (3)

Staff

Opportunity for work on individual library or experimental projects. Open to qualified students by permission; arrangements must be made with the sponsoring faculty member prior to registration. May be repeated once for credit. (Fall and spring—as arranged; summer 1969)

196 History and Systems of Psychology (3)

Caldwell and Staff

Senior capstone course which includes a survey and integration of the major viewpoints and concepts of psychology. Required of psychology majors. (Fall—day; spring—evening; summer 1969)

198 Current Research Issues in Psychology (3)

Staff

Conducted as a seminar. Recent experiments in psychology, including those performed by members of the class; emphasis on student participation. Limited to senior psychology majors. (Spring—day)

THIRD GROUP

Third-group courses are limited to graduate students in Psychology, except by special permission of instructor and Chairman of the Department.

202 Psychological Research Methods and Procedures (3)

Walk

Required in all graduate Psychology programs. Prerequisite: a laboratory course in experimental psychology and an elementary course in statistics (Spring—day)

- 203-4 Experimental Foundations of Psychology (3-3)** Hammer
Required of doctoral students in Psychology during first year of study. *First half*: problems in physiologic processes, psychophysics, sensation, and perception. *Second half*: motivation, learning, cognitive processes. (Academic year—day)
- 206 Methods of Clinical and Personality Research (3)** Rice
Review of techniques especially relevant to research in clinical, personality, and social psychology. Scaling methods, multivariate techniques, and an introduction to the use of computers in data analysis. Prerequisite: Psychology 202; Statistics 105 or equivalent. (Fall—day)
- 209 Seminar: Psychology of Motivation (3)** Caldwell
Various theoretical approaches to the psychology of motivation; systematic concepts and experimental findings deriving from each approach. (1969-70 and alternate years; spring—evening)
- 211 Assessment of Cognitive Functioning (3)** Levy
Concept of intelligence and its assessment through the use of a battery of tests and clinical procedures. Prerequisite: elementary course in tests and measurements. Graduate students in fields other than Psychology admitted by permission of instructor. Material fee, \$7. (Fall—day; spring—evening)
- 212 Personality Assessment by Projective Techniques (3)** Silber, Meltzer, Levy
Emphasis on administration and scoring of Rorschach Test. Prerequisite: Psychology 211. Graduate students in fields other than Psychology admitted by permission of instructor. (Fall—evening; spring—day; summer 1969)
- 213-14 Seminar: Developmental Psychology (3-3)** Abravanel, Goodnow, Walk
(Replaces former Psychology 217)
First half: research and theory in developmental psychology, emphasis on perceptual and cognitive development; consideration of the development of social awareness and of genetic-biological growth processes. *Second half*: emphasis on current research and theory in perceptual and cognitive development, intensive study of selected research problems. (Academic year—day)
- 215 Personality Assessment by Multiple Procedures (3)** Silber, Meltzer
Consideration and use of a wide range of procedures in assessment of personality. Prerequisite: Psychology 211 and 212. Graduate students in fields other than Psychology admitted by permission of instructor. (Fall—day; spring—evening; summer 1969)
- 218 Seminar: Systems of Psychotherapy (3)** Silber
Introduction to theory and technique of psychotherapeutic approaches: psychoanalytic, ego-centered, nondirective, transactional, and others. Original sources surveyed. (Spring—evening)
- 219 Seminar: Topics in Advanced Clinical Psychology (3)** Margolin, Ives
Selected areas of research and theory in the general field of clinical psychology. Community psychology and professional problems alternate. In-

- dependent topics each semester; may be repeated for credit. (Fall and spring—evening)
- 220 Seminar: Abnormal Psychology (3)** Hunt
(Fall)
Study of selected problems in the field of abnormal psychology. and spring—day)
- 223 Seminar: Learning (3)** Hammer
(Spring—evening)
Selected topics in the psychology of learning.
- 226 Seminar: Clinical Psychology of Childhood and Adolescence (3)** Johnson
(Spring—evening)
Survey of behavior and personality disorders.
- 227-28 Seminar: Variations in Psychotherapeutic Approach (3-3)** Kahn
(Academic year—day)
Patient needs and demands on the therapist. Case participation heavily relied upon. Open to qualified students in psychology and related fields. with permission of instructor. May be repeated once for credit.
- 229 Seminar: Principles of Behavior Change (3)** Phillips
(Spring—day)
Stimulus-organism-response variables and their interactions, with emphasis on learning theory as applied to clinical problems.
- 231 Development of Psychometric Instruments (3)** Mosel
(Fall—evening)
Quantitative techniques and principles used in construction, standardization, and evaluation of personality and ability measures for research and practice; quantification of human judgment for measurement purposes. Prerequisite: course in tests and measurements and an elementary course in statistics.
- 234 Seminar: Theory of Psychological Measurement (3)** Mosel
(Summer 1969)
Development of classical axiomatic-deductive theory underlying major notions in the construction and evaluation of psychological tests.
- 245 Seminar: Organizational Behavior (3)** Mosel
(Spring—evening)
Analysis of organizational behavior; emphasis on motivation and productivity. Recent research on employee attitudes, primary group, effects of various patterns of supervisory leadership, role of formal and informal organization, job design.
- 246 Seminar: Personnel Measurement Techniques (3)** Mosel
(Summer 1970 and alternate summers)
Detailed consideration of techniques of personnel selection and performance evaluation. Employment tests, personal data, assessment interviews, and performance ratings.
- 247 Seminar: Topics in Psychotechnology (3)**
Research and theory in the general field of human performance in work organizations. Open to qualified students in psychology, engineering, and the social sciences with permission of instructor. Independent topics each semester; may be repeated for credit. (1969-70 and alternate years; as arranged)

- 251 **Seminar: Advanced Social Psychology (3)** Tuthill
Current research and theory in social psychology; group dynamics, ego-involvements, action research, and social interaction theory. (Fall—day)
- 252 **Research Methods in Social Psychology (3)** White, Tuthill
May be repeated once for credit. 1969–70 and alternate years: opinion-survey techniques; interviewing, content-analysis, etc. 1970–71 and alternate years: attitude-survey techniques; interviewing, content-analysis, etc. (Spring—evening)
- 254 **Seminar: Experimental Social Psychology (3)** Tuthill
Experimental study of small groups, autocratic and democratic group climates, interaction process analysis, Lewin's field-theoretical approach to individual and group processes. (1969–70 and alternate years: spring—evening)
- 256 **Seminar: Psychology of Group Conflict (3)** White
An attempt to integrate evidence from animal behavior, child behavior, anthropology, psychiatry, and recent history, including World Wars I and II and the present East-West conflict. (Offered last time summer 1969)
- 259 **Seminar: Social Psychology of Communism (3)** White
Public and governmental opinion in communist countries, authoritarian thinking, communist propaganda, problems of Western communication with communist countries. (Fall—day)
- 261 **Seminar: International Communication (3)** Mosél
Primarily for students in the schools of Government and Business Administration and Public and International Affairs. Communicating information and effecting attitude change across cultures by mass media. Emphasis on psychocultural factors and the functions of mass communication in the development of transitional societies. (Spring—evening)
- 269 **Seminar: Topics in Social Psychology (3)**
Selected areas of research and theory in social psychology. Independent topics each semester; may be repeated for credit. (Fall—day)
- 272 **Seminar: Theories of Personality (3)** Caldwell
Emphasis on theoretical problems and methodology in the field of personality study. (Fall—evening; spring—day)
- *280 **Vietnam: Causes and Prospects (3)** White, Gordon
An interdisciplinary, area-centered approach, with primary stress on the causes of the war, but with attention also to the future of Southeast Asia as a whole. (Spring—day)
- 283–84 **Practicum in Clinical Psychology (3–3)** Silber
Supervised practical instruction in agencies doing clinical psychological work. Prerequisite: Psychology 212. Admission by permission of instructor. (Academic year—as arranged; summer 1969)
- 289 **Seminar: Current Topics in Experimental Psychology (3)** Staff
Review and discussion of contemporary research and theory in a specialized field of psychological study, by leaders in the field. Independent

* An interdepartmental course offered by the departments of Psychology and Political Science.

358 COURSES OF INSTRUCTION

topics each semester; may be repeated for credit. (Fall and spring—
evening)

290 Seminar: Special Problems in Personality Research (3) Murphy
Selected theoretically important and challenging contemporary research
problems. May be repeated once for credit. (Fall and spring—day)

292 Seminar: Perception (3) Walk
Study of current research and theory in the experimental psychology of
perception. (1970-71 and alternate years: fall—day)

293 Seminar: Psychology of Thinking (3) Rice
Thinking and problem solving. Specific topics include: concept formation,
nature of insight, and other cognitive processes. (1969-70 and alter-
nate years: spring—day)

295 Independent Research in Psychology (arr.) Staff
Individual library or experimental research under supervision of staff mem-
ber. Arrangements must be made with sponsoring faculty member prior
to registration. May be repeated once for credit. (Fall and spring—
as arranged; summer 1969)

299-300 Thesis Research (3-3) Staff
(Academic year—as arranged; summer 1969)

FOURTH GROUP

398 Advanced Reading and Research (arr.) Staff
Limited to students preparing for the Doctor of Philosophy general exam-
ination. May be repeated for credit. (Fall and spring—as arranged;
summer 1969)

399 Dissertation Research (arr.) Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit.
(Fall and spring—as arranged; summer 1969)

Public Administration

Professors D.S. Brown, Waldo Sommers, K.E. Stromsem (*Chairman*), S.M.
Rosen (*Visiting*), Edwin Timbers, D.R. Cloutier
Professorial Lecturers W.G. Torpey, C.E. Goode, Ben Posner, C.L. Berg, G.C.
Jacobus, R.R. Temple
Associate Professorial Lecturers Ross Pollock, Norman Beckman, L.B. Pouliot,
W.E. McConville
Assistant Professor S.R. Chitwood

*Master of Public Administration in the fields of Personnel Administration or Public
Administration.—See pages 136-39, 142-43.*

Doctor of Public Administration.—See pages 147-49.

*Master of Arts in Government in the fields of Personnel Administration or Public
Administration.—See pages 136-39, 144-45.*

THIRD GROUP

- 213 Administration in Government (3)** Cloutier
Critical analysis of federal administrative organizations as an integral part of the political system. Roles of Congress, the Presidency, the Courts, interest groups, political parties, and the public in the administrative process; special attention to centripetal and centrifugal forces. (Fall—day and evening; spring—evening; summer 1969)
- 215 Comparative Administrative Systems (3)** Rosen
Examination and analysis of the administrative systems of selected foreign governments; attention to practices applicable to administration in the United States. (Fall—evening)
- 216 Administration of International and Supranational Activities (3)** Staff
Analysis of the evolution and application of the administrative process in selected international and supranational activities. Problems of organization and management in multi-national supported and staffed activities. (Spring—as arranged)
- 217 Seminar: Developmental Administration I (3)** Brown
National cultures and their relationships to administrative systems. Colonialism and its vestiges. The problems and deficiencies of administration in underdeveloped countries. (Fall—evening)
- 218 Seminar: Developmental Administration II (3)** Brown
Problem of the transfer of administrative capability from one country to another. Political and administrative development. Unilateral and multi-lateral approaches. The role of the innovator. Strategies of administrative development. (Spring—evening)
- 221 Management in the Executive Branch (3)** Rosen
Analysis of application of management theory and practice in the Executive Branch of the Federal Government; emphasis on staff responsibilities and relationships and internal organization and control. (Fall and spring—evening; summer 1969)
- 223 Behavioral Factors in Large Organizations (3)** Brown
Analysis of the nature and characteristics of bureaucracy; dysfunctionism; approaches to policy guidance and leadership, particularly in large public organizations; influence and control systems. (Fall and spring—evening)
- 231 Public Personnel Administration (3)** Sommers
Survey of basic principles and functions of personnel administration in the public service. Roles of personnel management, recruitment, placement, wage and salary administration, training, retirement, and other personnel functions. (Fall—evening)
- 232 Problems in Public Personnel Management (3)** Sommers
Analysis and evaluation of major personnel management problems in government: employee-management relations; interagency and intergovernmental relationships. Impact of automation. Evaluation of personnel systems. (Spring—evening)

- 233 Seminar: Manpower Development and Utilization (3)** Staff
 Analysis of manpower resources. Research projects and case studies in ways and means of increasing employee potential; use of training programs, executive development, incentive systems. (Spring—evening)
- 235 Technological Change and Manpower (3)** Staff
 Research, discussion, and readings dealing with manpower problems arising from automation and other technological changes. Evaluation of these developments in government and business; their implications for productivity, employment, training and education, and personnel and industrial relations. Analysis of economic, political, and social factors influencing public and private industry manpower policies. (Fall—evening)
- *243 Local Government Law (3)** Pock
 Decision-making processes in metropolitan and local communities; types and objectives of city, county, and special function local government units; intergovernmental units; intergovernmental relations; original organization and changes; local lawmaking; community planning and development. (Fall—day and evening)
- 246 Urban Dynamics (3)** Beckman
 Forces that lie behind economic decisions which in turn determine the development of cities. (Fall—evening)
- 248 Financing Metropolitan Services (3)** Cloutier
 Analysis of the structure and administration of public finance of local governments. (Spring—evening)
- 249 Administration in Metropolitan Area Governments I (3)** Cloutier
 Examination of public administration at the local level. Developments and trends growing out of the changing urban pattern. (Fall—evening)
- 250 Administration in Metropolitan Area Governments II (3)** Cloutier
 Examination of newly emerging political and social groups in metropolitan areas and their relations to governmental administration. Examination of federal programs in metropolitan areas. Prerequisite: Public Administration 249 or permission of instructor. (Spring—evening)
- †251 Governmental Budgeting (3)** Stromsem, Posner
 Survey of the basic concepts, principles, and practices in governmental budgeting; interrelationship of planning, programming, and budgeting; their role in the management process. (Fall and spring—evening; summer 1969)
- 252 Problems in Planning, Programming, and Budgeting (3)** Chitwood
 Intensive analysis of developments in federal planning, programming, and budgeting; application of new tools in the decision-making process; evaluation of the systems. (Fall and spring—evening)
- 254 Seminar: Financial Management in the Federal Service (3)** Stromsem
 Functions and interrelationships of central federal financial management agencies, their policy, economic and managerial roles, controllership functions.

* Same as Law 349 (2). Students electing Public Administration 243 make special arrangements with instructor for supplementary assignments equivalent to one additional semester hour. Dr. Pock is Professor of Law in the National Law Center.

† Special sections of this course offered in the Navy Graduate Financial Management Program

- tions, and standards and practices in financial management. (Spring—evening)
- 260 **Seminar: Policy Formulation and Administration** (3) Rosen
Analysis in depth of factors and processes involved in policy development with particular attention to selected areas of national policy; development of agency goals and objectives. (Fall—evening)
- 261 **The Public and the Administrator** (3) Staff
Nature of the public interest, ways of determining public opinion, public opinion and the decision-making process, theories and methods of working with the public, interest groups, public relations and information programs. (Fall—evening)
- 262 **Seminar: Science, Technology, and Public Policy** (3) Rosen
The impact of science and technology upon public administration in terms of both administrative practice and national policies. (Spring—evening)
- 263 **Seminar: Regulation of Transportation I** (3) Hill
History of development of modes of transportation in the United States; economic problems and growth of regulatory legislation and philosophy; the Congressional power to regulate; the scope of federal regulation; agency administration, enforcement, and procedure; introduction to principles of certification and rate making. (Same as Law 407 (2)).* (Fall—evening)
- 264 **Seminar: Regulation of Transportation II** (3) Hill
Principles of certification of rail, motor, water, and air carriers; elements and principles of rate making; comparison of problems, procedures, and regulatory philosophies of the various regulatory agencies. (Same as Law 408 (2)).* (Spring—evening)
- 271 **Readings and Research in Public Administration** (3) Stromsem
Advanced directed readings and research in specific areas of public administration. (Fall and spring—as arranged; summer 1969)
- 273 **Colloquium: Public Administration and American Political and Social Institutions** (3) Cloutier
Supervised study in depth of contemporary literature in selected fields, and of research methodology in public administration. Primarily for doctoral candidates. (Fall—as arranged)
- 298 **Case Studies in Public Administration** (3) Rosen
Analysis and discussion of problems in public management by use of the case method. (Spring—evening)
- 299 **Thesis Seminar** (3) Sommers
Examination of thesis standards, research philosophy and methodology. (Fall and spring—evening; summer 1969)
- 300 **Thesis Research** (3) Staff
(Fall and spring—as arranged; summer 1969)

* Students registering for Public Administration 263 or 264 make special arrangements with instructor for supplementary assignments equivalent to one additional semester hour. Mr. Hill is Professorial Lecturer in Law in the National Law Center.

FOURTH GROUP

398 Advanced Reading and Research (arr.)

Staff

Limited to students preparing for the Doctor of Public Administration general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

399 Dissertation Research (arr.)

Staff

Limited to Doctor of Public Administration candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Public and International Affairs*

Professors A.E. Burns, J.W. Brewer, H.M. Merriman, D.S. Watson, R.H. Davison, W.H. Kraus, R.B. Thompson, J.W. Kendrick, C.T. Stewart, Jr., H.L. LeBlanc, C.E. Galbreath, Kurt London, H.M. Stout, J.N. Mosel, W.C. Hopkins, F.H. Michael, R.E. Purcell, Joseph Aschheim, R.K. White, Benjamin Nimer, Helen Yakobson, R.P. Sharkey, Andrew Gyorgy, Mario Rodriguez, C.B. Sargent, George Stambuk, H.C. Hinton, H.M. Sachar, Lothar Metzl (*Research*), Vladimir Petrov, Burton Sapin

Ambassador in Residence G.V. Allen

Professorial Lecturers Bela Maday, Joseph Baclawski, John Hardt, Tao-tai Hsia, Matthew Gallagher, F.L. Hadsel, L.C. Tihany, Bernard Gordon, Roman Kolkowicz, Bernard Ramundo

Associate Professors R.S. Jordan, P.P. Hill, Ching-Yao Hsieh, W.R. Johnson, Sidney Ploss (*Research*), Chung-wen Shih, J.K. McDonald, Toru Yano (*Research*), J.A. Morgan, Jr., C.F. Elliott, R.Y.C. Yin

Associate Professorial Lecturers Philip True, Donald Robinson, Robert Ellert, John Hanessian, Jr.

Assistant Professors Bernard Reich, D.T. Allensworth, Richard Thornton, G.C.Y. Wang, Anita Dasbach, D.L. Lee, R.N. Dunn, Jr., S.J. Wayne

Assistant Professorial Lecturers C.A. Linden, Ming-jean Loh

Instructor K.L. Storrs

Bachelor of Arts in the field of Chinese Studies.—Prerequisite: the Chinese Studies curriculum, page 80, including Chinese 5-6.

The general requirements are stated on pages 155-57. The sixty semester hours must include courses as described in I and II below.

I. Twenty-four semester hours of course work distributed as follows: (a) Chinese 7 and 163 or 164; (b) Economics 169; (c) six hours selected from History 138, 187, 188, 195, 196; (d) six hours selected from Political Science 101, 193, 194.

II. Thirty-six semester hours chosen from (a), (b), or (c) below:

(a) Economics concentration—twenty-seven semester hours of approved Economics courses (including a six-hour research and writing seminar) and nine semester hours of electives selected from courses other than Economics, or

(b) History concentration—twenty-one semester hours of approved History courses (including a six-hour research and writing seminar) and fifteen semester hours of electives selected from courses other than History, or

(c) Political Science concentration—twenty-four semester hours of approved Political Science courses (including a six-hour research and writing seminar) and

* Programs in Chinese Studies, International Affairs, and Public Affairs are administered by the School of Public and International Affairs, Burton Sapin, Dean

twelve semester hours of electives selected from courses other than Political Science.

Bachelor of Arts in the field of International Affairs.—Prerequisite: the International Affairs curriculum, page 80.

The general requirements are stated on pages 155–57, 157–58. The sixty required semester hours must include: (1) Economics 181–82; six semester hours of foreign language composition and conversation; History 157, 182; Political Science 171, 181–82, 197; (2) fifteen semester hours of electives; (3) fifteen semester hours from one of the Group Options listed below:

Group I. International Politics—courses selected from Geography and Regional Science 125, 126, 127; History 139–40, 149, 183, 184; Political Science 107, 111, 112, 113, 117–18, 160, 167, 172, 196.

Group II. International Economics—courses selected from Business Administration 175, 176, 177, 178; Economics 101, 102, 104, 121, 122, 134, 147, 165; Geography and Regional Science 125, 126, 127, 132, 134; Statistics 111, 112, 122.

Group III. International Communications—courses selected from Anthropology 150, 153, 157, 161, 162; Geography and Regional Science 125; Journalism 145, 146; Philosophy 192; Political Science 146, 167; Psychology 115, 151, 156; Sociology 144.

Group IV. Regional Study with a concentration in one of the following areas: (1) Africa—courses selected from Anthropology 178, 179, Geography and Regional Science 155, Political Science 189, 190, 192, 196; (2) Europe—courses selected from Economics 147, Geography and Regional Science 153, History 131–32, 141–42, 147, 149, 151–52, 158, 162, Political Science 111, 112, 113, 117–18; (3) Far East—courses selected from Anthropology 173, 174, 175, Economics 169, Geography and Regional Science 165, History 187, 188, 195–96, Political Science 101, 113, 193, 194, 196; (4) Latin America—courses selected from Anthropology 170, 172, Economics 185–86, Geography and Regional Science 161, History 162, 163–64, 165, 166, Political Science 177, 178, interdisciplinary seminar 287 offered by six departments participating in the Latin American Studies program; (5) Middle East—courses selected from Anthropology 177, History 149, 158, 193, Political Science 191, 192, 196; or (6) Soviet Orbit—courses selected from Economics 133, 134, Geography and Regional Science 166, History 138, 145–46, 149, Political Science 107, 112, 115, 118, 160, 161, 163, Slavic Languages and Literatures 161–62, 165, 166.

Bachelor of Arts in the field of Public Affairs.—Prerequisite: the Public Affairs curriculum, pages 80–81.

The general requirements are stated on pages 155–57, 158. The sixty required semester hours must include: (1) Economics 102, 121, 161, 162; History 175–76; Political Science 121–22, 145, 151; (2) eighteen semester hours of electives; (3) twelve semester hours from one of the Group Options listed below:

Group I. Economics—Economics 101, 104, 165, 181.

Group II. Politics—Political Science 104, 111, 119, 126.

Group III. Urban Affairs—to be selected from Business Administration 174; Education 123; Geography and Regional Science 141; Political Science 103, 104; Psychology 151; Sociology 126.

Certificate of the Institute for Sino-Soviet Studies.—Prerequisite: a Bachelor's degree from an accredited college or university with an undergraduate major in a pertinent field, with emphasis on communist affairs.

The general requirements are stated on pages 164–65. The program consists of thirty semester hours of graduate study and the passing of a reading examination in Russian or Chinese, or both.

Master of Arts in the field of International Affairs.—Prerequisite: a Bachelor's degree from an accredited college or university with background courses corresponding to an undergraduate major in International Affairs at this University.

Required: in addition to the general requirements, pages 158–61, the following specific requirements must be met: (1) a scheduling of graduate courses amounting to twenty-four semester hours, planned in consultation with the adviser on the basis of the student's selection from the following general and regional studies—(a) Com-

parative Government and Politics; International Law, International Politics, and International Organization (to include Communist International Relations); Modern Political Theory (to include Socialist and Communist Theory); International Economics (to include International Economic Development); (b) modern history, government and politics, and economic history and problems of Western Europe, Eastern Europe, Russia-Soviet Union, Latin America, Middle East, Africa, South and Southeast Asia, China; U.S. Diplomatic History, American Foreign Policy; (2) Political Science 299-300 *Thesis* (3-3); and (3) a set of written examinations over two fields within the broad area of international affairs (one general field and one regional field constitute a frequently followed pattern).

Master of Arts in the field of Public Affairs.—Prerequisite: a Bachelor's degree from an accredited college or university with an undergraduate major in public affairs, economics, history, or political science, depending upon the field of specialization in the Master's program.

Required: the general requirements, pages 158-60, 160-61. The twenty-four semester hours of required courses (exclusive of Political Science 299-300 *Thesis*) are to be selected from one of the following fields of specialization: Domestic Economics (courses in economic development, economic policy, public finance, and national income); Domestic Politics (courses in U.S. social, constitutional, and political history; comparative government; political theory; legislative organization; jurisprudence; political parties; and public opinion).

Master of Science in International Affairs.—Offered in cooperation with the College of General Studies in the off-campus programs at the National War College, Fort McNair, Washington, D.C., and the Naval War College, Newport, R.I.

Religion

Professor R.G. Jones (Chairman)

Associate Professors H.E. Yeide, Jr., Dewey Wallace, Jr.

Assistant Professors Sonya Quitslund, A.J. Hildebeitel

Assistant Professorial Lecturer E.W. Seaman

Bachelor of Arts with a major in Religion (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 76, including Religion 9, 10, and 59-60.

Required: the general requirements, pages 81-85, and the passing of the Religion major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the history and literature of the world's religions and the philosophical and ethical problems of religious thought. A student may elect to give special emphasis in his program to Christianity, Judaism, or the religions of India. A proseminar (Religion 199-200) assists the student in preparing for the major examination. A pamphlet containing a detailed description of the major is available in the offices of the Dean of Columbian College of Arts and Sciences and the Chairman of the Department of Religion.

American Civilization 101 is recommended as a senior-year elective for Religion majors.

Master of Arts in the field of Religion.—Prerequisite: an undergraduate major in Religion at this University, or equivalent.

Required: the general requirements, pages 89-95. Of the twenty-four semester hours of required courses (exclusive of the thesis) at least twelve must be in third-group Religion courses; a maximum of nine may be in a closely related field outside the Department of Religion as approved by the Department.

Master of Arts in the field of Religious Education.—Prerequisite: an undergraduate major in Religion at this University, or equivalent; the following specific courses or equivalent: Education 108; Psychology 1, 22, and 29; Anthropology 1; Speech 1 or 11.

Required: the general requirements, pages 89-95. Of the twenty-four semester hours of required courses (exclusive of the thesis), at least six must be in third-group Religion courses; a maximum of twelve may be in a closely related field outside the Department of Religion as approved by the Department.

Doctor of Philosophy in the field of American Religious History (offered in cooperation with the Department of History).—See pages 89-93, 95-97, for requirements for the degree.

FIRST GROUP

9 The Old Testament (3) Jones, Quitslund

Historical and literary study of the Old Testament with consideration of development of religious ideas, institutions, and outstanding personalities. (Fall—day and evening; summer 1969)

10 The New Testament (3) Jones, Quitslund

Study of New Testament literature from the standpoint of occasion, purpose, dominant ideas, and permanent values. Emphasis on approach, structure, and significance of the Gospels and Epistles. (Spring—day and evening; summer 1969)

21 Introduction to Religious Thought (3)

Traditional religious concepts, language of contemporary religion amidst modern scientific and secular intellectual tendencies, and the place of religion in today's society. (Not offered 1969-70)

59-60 History of Religions (3-3)

Wallace, Hildebeitel

Origins, evolution, and contemporary status in historical context. *First half:* primitive religion and the religions of the East (Hinduism, Buddhism, Taoism, Confucianism, Shinto). *Second half:* religions of the West and Near East (ancient religions, Judaism, Christianity, Islam). (*First half:* fall—day and evening; spring—day; summer 1969. *Second half:* fall—day; spring—day and evening; summer 1969.)

SECOND GROUP

103 The Prophets (3)

Development of prophetism in the Old Testament; cultural, economic, psychological, and religious factors; elements of lasting value in the prophetic teaching. Study of selected prophets. (Not offered 1969-70)

104 The Life and Thought of Jesus (3)

Comprehensive study of the life and teachings of Jesus with critical attention to sources. (Not offered 1969-70)

105 The Life and Thought of Paul (3)

Quitslund

Backgrounds of early Christianity, first-century religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's presentation of the Christian faith. (Spring—day; summer 1969)

121 Philosophical Problems of Western Religious Thought (3) Quitslund

Classical and contemporary religious thinkers with reference to the nature of religious truth and experience; the existence, character, and activity of God; and the predicament of man. (Summer 1969)

122 Christian Ethics and Modern Society (3)

Nature and principles of Christian life as developed by the Christian community; problems of personal conduct; application to family, social, and economic institutions. (Not offered 1969-70)

127 Medicine, Religion, and Healing (1)

Staff

Primarily for second-year students in the School of Medicine; open to Religion majors with the approval of the instructor. Introduction to the Total Care concept emphasizing the importance of religion in medical practice for patient and physician. Concept of the professional man, the clergy's role in healing, Jewish and Christian faiths and their attitudes in problem areas. Case studies. (Spring—day)

131 History of Christianity to the Reformation (3)

Wallace

Rise and expansion of Christianity, development of Christian thought, and evolution of church organization and worship. (Fall—day)

132 History of Modern Christianity (3)

Wallace

Origin and development of Protestantism; Roman Catholic revival; status of Eastern churches; doctrines, worship, expansion, church and state, and relation to modern thought and life. (Spring—day)

135 History of Judaism to the Talmud (3)

Seaman

History and religious thought of the Jewish people from the Maccabean revolt to the compilation of the Talmud. (Fall—day)

136 History of Medieval and Modern Judaism (3)

Seaman

History and religious thought of the Jewish people from the compilation of the Talmud to the present. (Spring—day)

141-42 Religious Education (3-3)

Religious education in the home, church, and community; basic educational procedures and special techniques; organization and administration of religious education. (Not offered 1969-70)

159 Hinduism (3)

Hiltebeitel

Emergence of the structures of Hindu life and thought out of ancient Vedic religion, religious philosophy, role of Hinduism in Indian civilization. (Fall—evening)

160 Buddhism (3)

Hiltebeitel

Origin, development, and contemporary status of Buddhist life and thought; its impact on Asian civilization. (Spring—evening; summer 1969)

172 Religion in American Culture (3)

Wallace

Growth of religious bodies and institutions in relation to American culture, development of religious thought, and analysis of the contemporary religious scene. (Fall—day; summer 1969)

199-200 Proseminar: Readings for the Major (3-3)

Staff

Readings and group discussions. (Academic year—ns arranged)

THIRD GROUP

- 209-10 **Seminar: Biblical Literature (3-3)** Jones
Main problems of Biblical literary and historical criticism. (Academic year—evening)
- 211-12 **Seminar: Biblical Thought (3-3)**
Biblical interpretation of history and reality and its relation to Biblical beliefs about God, man, and the world. (Not offered 1969-70)
- 222 **Seminar: Christian Ethics (3)**
Important tendencies in ethical reflection of the contemporary Christian Church; contributions of social sciences to that reflection. (Not offered 1969-70)
- 231-32 **Seminar: Early and Medieval Christianity (3-3)**
Christian thought from primitive beginnings to the Reformation. (Not offered 1969-70)
- 233-34 **Seminar: Reformation and Modern Christianity (3-3)** Quitslund
Western religious thought from the 16th century to the present. (*First half*: not offered 1969-70. *Second half*: spring—evening.)
- 241-42 **Seminar: Religious Education (3-3)**
Major problems in the practice of religious education. (Not offered 1969-70)
- 271 **Seminar: American Religious History to 1830 (3)** Wallace
Religious thought and life during the Colonial and early National period. (Fall—evening)
- 273 **Seminar: American Religious History since 1830 (3)**
Religious thought and life from the antislavery movement to the present. (Not offered 1969-70)
- 291-92 **Readings and Research (3-3)** Staff
Investigation of special problems. (Academic year—as arranged; summer 1969)
- 299-300 **Thesis Research (3-3)**
(Academic year—as arranged; summer 1969)

Romance Languages and Literatures

Professors Rafael Supervia, J.W. Robb, G.E. Mazzeo
Associate Professors J.A. Frey, J.L. Métivier, Jr., J.F. Burks (*Chairman*), Fred Abrams, Martha Adem, Mary Ann Coffland
Assistant Professors Elizabeth Neyman, G.P. Huvé, Julia Hicks, Dorothy Betz, J.R. Frissora, Charles Mudge
Assistant Professorial Lecturer Esther Lawton
Instructors Diana Bronte, Estelle Irizarry, F.L. Walser
Director of Language Laboratories W.M. Kincaide

Bachelor of Arts with majors in (1) French Language and Literature, (2) Spanish American Literature, and (3) Spanish Language and Literature (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 76.

Required: the general requirements, pages 81–85, and the passing of the major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the political, social, and cultural backgrounds of the literature studied; the writers and their works. Proficiency in the spoken and written language is required. Majors in Romance Languages are strongly advised to study Latin, a knowledge of which is generally required for graduate work. A proseminar in each of the major fields assists the student in his preparation for the major examination.

Master of Arts in the fields of (1) French Language and Literature, (2) Spanish American Literature, and (3) Spanish Language and Literature.—Prerequisite: the degree of Bachelor of Arts in the appropriate field from this University, or equivalent.

Required: the general requirements, pages 89–95. The thirty semester hours of required work must include a thesis (six semester hours). The remainder of the program is arranged in consultation with the student's major adviser.

Doctor of Philosophy fields of study in Romance Languages and Literatures: (1) French Literature (Old and Middle Renaissance, 17th Century, 18th Century, 19th Century, Modern); (2) Spanish Literature (Old, Medieval, Literature of the Siglo de Oro, 18th Century, 19th Century, Contemporary); (3) Spanish American Literature; and (4) Philology.—See pages 89–93, 95–97, for requirements for the degree.

Bachelor of Arts in Education with teaching fields in French and in Spanish.—Prerequisite: the Education curriculum, page 78.

Required: the French option or the Spanish option and the professional courses listed on pages 107, 112, 114.

Bachelor of Arts with a major in Latin American Studies with optional emphasis in Hispanic Literature (Interdepartmental).—See page 301.

Master of Arts in the field of Latin American Studies with optional emphasis in Spanish American Literature (Interdepartmental).—See pages 301–2.

Master of Arts in the field of Linguistics.—See pages 303–5.

Placement Examination: A standardized placement examination given before registration is required of all entering students who wish to continue in college the language begun in high school. Upon completion of the examination, assignment is made to the appropriate course, with credit assigned on the usual basis.

FRENCH

Departmental prerequisite: French 3–4 or 6, or equivalent, is required (French 51–52 is recommended) as prerequisite to all second-group courses in French.

FIRST GROUP

1–2 First-year French (3–3)

A year course: credit toward a degree at this University given on completion of French 2. For beginners. Pronunciation, conversation, grammar, composition, reading of modern French prose. Aural training, oral practice in language laboratory. Laboratory fee, \$17.50 a semester. (First half and second half: fall and spring—day and evening; summer 1969)

Staff

2x First-year French (3)

Staff

Intensive course to which are assigned entering students with one or more years of high school French whose placement tests show them inadequately prepared for the regular work of French 3. Meets six hours a week (3 hours of lecture, 2 hours of drill, 1 hour of laboratory) and carries 3 semester hours of credit. Fee \$217 (tuition fee of \$192 plus additional fee of \$25) plus laboratory fee, \$17.50. (Fall—day and evening)

3-4 Second-year French (3-3)

Staff

A year course: credit toward a degree at this University given on completion of French 4. Conversation, grammar, composition, reading in modern French prose, introduction to French civilization. Aural training, oral practice in language laboratory. Prerequisite: French 1-2, 2x, or two years of high school French. Laboratory fee, \$17.50 a semester. (*First half and second half: fall and spring—day and evening; summer 1969*)

6 Second-year French (6)

Staff

Lecture (3 hours), discussion (3 hours). Intensive, accelerated course which covers material of French 3-4. Grammar review, reading, conversation. Prerequisite: two years of high school French with grades of B or better; or B or better in French 2 or 2x. (Spring—day)

9-10 French Conversation and Composition (3-3)

Staff

Prerequisite: French 4 or equivalent and permission of instructor. (*First half: fall—day and evening; spring—day. Second half: fall—day; spring—day and evening.*)

12 French Conversation and Composition (Intensive) (6)

Staff

Intensive, accelerated course which covers material of French 9-10. Laboratory fee, \$25. (Summer 1969)

49 French for Graduate Students (0)

Lawton and Staff

For graduate students preparing for reading examinations. No academic credit. Tuition fee, \$192. (Fall and spring—evening; summer 1969)

51-52 Survey of French Literature and Civilization (3-3)

Métivier

Social, artistic, and cultural background of French literature. Lectures, readings, recitations, and informal discussions. (*First half: fall—day; spring—evening. Second half: fall—evening; spring—day.*)

91-92 Analyse de texte (3-3)

Staff

Methodology and vocabulary of literary criticism; application of principles of *explication de texte* to selections from prose, drama, and poetry from the Renaissance to the present. (Academic year—day; summer 1969—French 91)

SECOND GROUP**103-4 Pronunciation and Intonation (3-3)**

Huvé

Recommended for majors. (Academic year—day)

109-10 Advanced French Conversation and Composition (3-3)

Huvé

First half: emphasis on diction. Second half: emphasis on style. Prerequisite: French 10 or equivalent and permission of instructor. (Academic year—day; summer 1969)

- 119-20 **French Literature of the Middle Ages and the Renaissance (3-3)** Métivier
(Formerly 16th Century French Literature)
 Literary history and the development of ideas. *Les chansons de geste*, courtly literature, satire, the theater, lyric and didactic poetry; Rabelais, Montaigne, La Pléiade. Class analysis of texts, collateral readings. (Academic year—day)
- 121-22 **17th Century French Literature (3-3)**
 History, philosophy, criticism, memoirs, letters, eloquence, drama, fiction, poetry. Class analysis of texts; collateral readings. (Not offered 1969-70)
- 123-24 **18th Century French Literature (3-3)** Staff
 History, philosophy, criticism, letters, drama, fiction, poetry, the "salons," idea of progress, idea of science. Class analysis of texts, collateral reading, lectures on literature and history. (Academic year—day)
- 125-26 **19th Century French Literature (3-3)** Betz, Frey
 Poetry, drama, and novel of the 19th century with emphasis on stylistic analysis. (Academic year—evening)
- 127-28 **20th Century French Literature (3-3)** Coffland
 Fiction, poetry, and drama from 1900 to present. Chronological examination of authors, movements. (Academic year—day)
- 129-30 **Contemporary French Literature (3-3)** Frey
(First half: summer 1969. Second half: not offered 1969-70.)
- 199-200 **Proseminar: Readings for the Major (3-3)** Staff
 Conferences and group discussions. (Academic year—day)

THIRD GROUP

- 201 **Grammar, Composition, and Stylistics (3)** Burks
 For secondary teachers of the French language and graduate students preparing to teach in secondary schools. (Summer 1969)
- 202 **Thème et Version (3)**
 Required of all graduate students in the field of French Language and Literature. Analysis and translation of selected prose passages, alternating between French and English; designed to teach students to write with precision and clarity. (1969-70 and alternate years: fall—day)
- 212 **Historical French Grammar (3)** Mudge
 Phonology, morphology, and syntax of Old French; its development from Vulgar Latin. Practical exercises based on texts. Prerequisite: a second-group course in French literature and an elementary knowledge of Latin. (Not offered 1969-70)
- 213-14 **Old French Literature (3-3)** Mudge
 French literature to the end of the Middle Ages. Prerequisite: a second-group course in French literature and permission of instructor. (Academic year—day)

- 224 **Seminar: the Age of Rabelais** (3) Burks
(Fall—day)
- 226 **16th and 17th Century Philosophical Literature** (3) Burks
The emergence of a literature of ideas; emphasis on the thought of Calvin, Montaigne, Descartes, and Pascal. (Spring—day)
- 228 **Seminar: the Literary Renaissance in Europe** (3) Burks
Study of developments in the poetry of Italy, France, and England.
(Not offered 1969–70)
- 231–32 **Theater in the 17th Century** (3–3)
Survey of the development of theatrical arts and the drama. Research papers and reports. Prerequisite: French 121–22 or equivalent. (Not offered 1969–70)
- 234 **17th Century Nondramatic Literature** (3)
Rationalism and the revolt against authority expressed in literature. Development of classical doctrine. (Fall—day)
- 241 **The Rationalistic Current in the 18th Century** (3)
The contribution of the *philosophes* to the intellectual evolution of France and Europe. (Fall—day)
- 242 **Seminar: the French Novel in the 18th Century** (3)
Development of the novel in France from *La Princesse de Clèves* to the French Revolution; themes and techniques. (Not offered 1969–70)
- 244 **Special Problems in 18th Century French Literature** (3)
(Spring—day)
- 250 **Romanticism in France** (3) Frey
Theory and practice of romanticism in France: romantic love, Napoleonic myth, exoticism, local color, sensationalism, and religiosity as reflected in new styles of prose and poetry. (Not offered 1969–70)
- 256 **19th Century French Literature** (3) Betz
(Summer 1969)
- 257 **Special Problems in the 19th Century Novel** (3) Frey
Topic for 1969–70: Zola. (Spring—day)
- 258 **Special Problems in 19th Century French Poetry** (3) Betz
Topic for 1969–70: Romantic poetry. (Spring—day)
- 264 **Seminar: Modern Period** (3) Coffland
Topic for 1969–70: the hero and the anti-hero. (Spring—day)
- 265 **20th Century French Theater** (3) Coffland
(Fall—day)
- 266 **20th Century French Poetry** (3) Coffland
Background and development of poetry in the 20th century; *explication de texte* approach. (Not offered 1969–70)
- 299–300 **Thesis Research** (3–3) Staff
(Academic year—as arranged; summer 1969—French 299)

FOURTH GROUP

398 Advanced Reading and Research (arr.)

Staff

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

399 Dissertation Research (arr.)

Staff

Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

ITALIAN

FIRST GROUP

1-2 First-year Italian (3-3)

Coffland and Staff

A year course: credit toward a degree at this University given on completion of Italian 2. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Italian prose. Aural training, oral practice in language laboratory. Laboratory fee, \$17.50 a semester. (Academic year—day)

3-4 Second-year Italian (3-3)

Coffland

A year course: credit toward a degree at this University given on completion of Italian 4. Conversation, grammar, composition, reading in modern Italian prose, introduction to Italian civilization. Aural training, oral practice in language laboratory. Prerequisite: Italian 1-2 or two years of high school Italian. Laboratory fee, \$17.50 a semester. (Academic year—day)

9-10 Italian Conversation and Composition (3-3)

Coffland and Staff

Prerequisite: Italian 4 or equivalent and permission of instructor. (Academic year—day)

51-52 Introduction to Italian Literature (3-3)

Coffland

Prerequisite: Italian 4 or equivalent. (Academic year—day)

SPANISH

Departmental prerequisite: Spanish 3-4 or 6, or equivalent, is required (Spanish 51-52 is recommended) as prerequisite to all second-group courses in Spanish.

FIRST GROUP

1-2 First-year Spanish (3-3)

Staff

A year course: credit toward a degree at this University given on completion of Spanish 2. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Spanish prose. Aural training, oral practice in language laboratory. Laboratory fee, \$17.50 a semester. (First half and second half: fall and spring—day and evening; summer 1969)

2x First-year Spanish (3)

Staff

Intensive course to which are assigned entering students with one or more years of high school Spanish whose placement tests show them inadequately prepared for the regular work of Spanish 3. Meets six hours a week (3 hours of lecture, 2 hours of drill, 1 hour of laboratory) and carries 3 semester hours of credit. Fee, \$217 (tuition fee of \$192 plus additional fee of \$25) plus laboratory fee, \$17.50. (Fall—day)

3-4 Second-year Spanish (3-3)

Staff

A year course: credit toward a degree at this University given on completion of Spanish 4. Conversation, grammar, composition, reading of modern Spanish prose, introduction to Hispanic civilization. Aural training, oral practice in language laboratory. Prerequisite: Spanish 1-2, 2x, or two years of high school Spanish. Laboratory fee, \$17.50 a semester. (First half and second half: fall and spring—day and evening; summer 1969)

6 Second-year Spanish (6)

Staff

Lecture (3 hours), discussion (3 hours). Intensive, accelerated course which covers material of Spanish 3-4. Grammar review, reading, conversation. Prerequisite: two years of high school Spanish with grades of B or better, or B or better in Spanish 2 or 2x. (Spring—day)

9-10 Spanish Conversation and Composition (3-3)

Staff

Prerequisite: Spanish 4 or equivalent and permission of instructor. (First half and second half: fall and spring—day)

12 Spanish Conversation and Composition (Intensive) (6)

Staff

Intensive, accelerated course which covers the material of Spanish 9-10. Laboratory fee, \$25. (Summer 1969)

49 Spanish for Graduate Students (0)

Hicks

For graduate students preparing for reading examinations. No academic credit. Tuition fee, \$192. (Fall and spring—evening)

51-52 Survey of Spanish Literature and Civilization (3-3)

Supervia

Social, artistic, and cultural background of Spanish literature. Lectures, readings, recitations, and informal discussions. (Academic year—day)

91-92 Explicación de textos (3-3)

Adem

Analytical introduction to Spanish and Spanish American literature. Method demonstrated and practiced on selected passages. (Academic year—day)

SECOND GROUP

103 Pronunciation and Intonation (3)

Adem

Descriptive and practical review of Spanish sounds and inflections. Remedial exercises. Recommended for majors; required for the Bachelor of Arts in Education degree with teaching field in Spanish. (Fall—day)

109-10 Advanced Spanish Conversation and Composition (3-3)

Mazzeo, Adem

Emphasis on diction and style. Prerequisite: Spanish 10 or equivalent and permission of instructor. (Academic year—day; summer 1969—Spanish 109)

- 119-20 **Medieval Spanish Literature (3-3)** Neyman
Survey by genre of the literature of the Middle Ages. (Not offered 1969-70)
- 121-22 **Spanish Literature of the Golden Age (3-3)** Abrams
First half: development of the Spanish drama from its origins to 1680, emphasis on Lope de Vega; the evolution of Spanish poetry. *Second half:* origins and development of the novel in the Golden Age, emphasis on the picaresque. (Academic year—day)
- 123-24 **Cervantes: Don Quijote (3-3)** Abrams
Cervantes' literary theories as reflected in the *Novelas Ejemplares* and the *Quijote*. The *Quijote* as a panorama of the social, political, and religious problems in the Spain of Cervantes. (Not offered 1969-70)
- 125-26 **Modern Spanish Literature (3-3)** Mazzeo
Prose, poetry, and drama of the 18th and 19th centuries. Class analysis of texts, collateral reading, lectures on literature and history. (Not offered 1969-70)
- 127-28 **Contemporary Spanish Literature (3-3)** Supervia
Prose and poetry of the 20th century. Class analysis of texts, collateral reading, lectures on literature and history. (Academic year—day)
- 129 **The Romantic Drama in Spain (3)** Mazzeo
Lectures on the Spanish Romantic Drama, class analysis of representative plays, collateral readings. (Summer 1970 and alternate summers)
- 130 **The Modern Spanish Essay (3)** Mazzeo
Development of the Spanish essay from the 16th century; emphasis on the 18th and 19th centuries. Class analysis of texts, collateral reading, and lectures. (Summer 1969 and alternate summers)
- 131 **The Generation of 1898 (3)** Supervia
Study of the various critical problems related to this renaissance of Spanish letters as a whole, and of its most representative figures and works. (Summer 1969)
- 145 **Panoramic Vision of Mexico (3)** Adem
A panoramic vision of Mexico in its cultural, educational, scientific, political, and social aspects. (Summer 1969)
- 151-52 **The Spanish American Novel (3-3)** Robb
Development of the novel in Spanish America. Lectures, collateral reading, and class analysis of texts. (Not offered 1969-70)
- 153-56 **Spanish American Literature to 1880 (3-3)** Robb
Literature of Spanish America from the colonial period to the latter part of the 19th century. Lectures, collateral reading, reports, and class analysis of important works. (Academic year—evening)
- 157-58 **Spanish American Literature since 1880 (3-3)** Robb
Literature of Spanish America from 1880 to the contemporary period. Lectures, collateral reading, reports, and class analysis of important works. (*First half:* summer 1969. *Second half:* not offered 1969-70.)

- 197-98 **Proseminar: Readings for the Major in Spanish American Literature (3-3)** Robb
Required of all majors. Conferences and group discussions. (Academic year—as arranged)
- 199-200 **Proseminar: Readings for the Major in Spanish Language and Literature (3-3)** Adem, Mazzeo
Required of all majors. Conferences and group discussions. (Academic year—day)

THIRD GROUP

- 201 **Grammar, Composition, and Stylistics (3)** Mazzeo
For secondary teachers of the Spanish language and graduate students preparing to teach in secondary schools. (Summer 1969)

- 215-16 **Old Spanish (3-3)** Neyman
(Replaces former Spanish 212 *Historical Spanish Grammar and 214 Old Spanish*)
First half: phonetics, literature. Second half: morphology, literature. (Academic year—day)

- 221 **Seminar: Cervantes' Don Quijote (3)** Abrams
Cervantes' works as literary expressions of his polemics with contemporaries on literary theory. The *Quijote* viewed as a satire against Lope de Vega and Tirso de Molina who appear in it as Don Quijote and Sancho Panza. Explication of Cervantes' cryptographic technique. (Not offered 1969-70)

- 223 **Seminar: "La Celestina" (3)**
Open to qualified undergraduates with permission of instructor. (Summer 1969)

- 224 **Seminar: Problems in Spanish Renaissance Literature (3)**
(Not offered 1969-70)

- 225 **Seminar: Special Problems in Golden Age Literature (3)** Abrams
(Spring—day)

- 229 **Seminar: the Two Quijotes (3)** Abrams
Intensive analysis of Avellaneda's false *Quijote*. Structural and ideological relationship to both halves of the original. Explication of Avellaneda's cryptographic technique. Prerequisite: Spanish 221 recommended. (Not offered 1969-70)

- 231 **Seminar: 18th Century Spanish Writers (3)** Mazzeo
Lectures and analysis of principal authors and works; relationships with subsequent literary movements. (Fall—day)

- 242 **Seminar: Spanish Romanticism (3)** Mazzeo
Lectures and analysis of principal authors and works. Collateral readings. Problems of origins and developments. (Spring—day)

- 244 **Seminar: Naturalism and the Spanish Novel (3)** Mazzeo
Development of Naturalism in 19th century Spain. Analysis of representative works of Pardo Bazán, Clarín, Blasco-Ibáñez, and others. (Not offered 1969-70)
- 245-46 **Seminar: Works of Galdós (3-3)** Supervía
Ideological and stylistic analysis: relationship of his works to literary movements of the second half of the 19th century. (Not offered 1969-70)
- 251 **Seminar: Works of Unamuno and Ortega y Gasset (3)** Supervía
Study of their thought; analysis and commentary on the texts. (Fall-day)
- 252 **Spanish Literature since the Civil War (3)** Adem
(Fall-day)
- 253 **Seminar: Studies in Modern Spanish American Poetry (3)** Robb
Selected post-Modernist poets: G. Mistral, P. Neruda, "Los Contemporáneos," O. Paz, L. De Greiff, the Nadaístas, G. Pardo Gracia. (Not offered 1969-70)
- 255 **Seminar: Studies in 20th Century Spanish American Theater (3)** Robb
(Fall-day)
- 256 **Seminar: Studies in Mexican Narrative Prose (3)** Adem
(Not offered 1969-70)
- 261 **Seminar: Studies in Spanish American Essayists (3)** Robb
The Spanish American essay as an artistic form; selected modern essayists—Rodó, Mallea, Vasconcelos, Arciniegas. (Not offered 1969-70)
- 264 **Seminar: Studies in Recent Spanish American Fiction (3)** Robb
Contemporary *cuentistas* and novelists: J.L. Borges, J.J. Arreola, J. Rufo. A. Yáñez, C. Fuentes, V. Leñero, J. Cortázar, M. Vargas Llosa, F. González, etc. (Spring-day)
- 266 **Seminar: Alfonso Reyes (3)** Robb
Alfonso Reyes the essayist-artist, poet, and complete humanist as studied in his various prose and poetic works. (Not offered 1969-70)
- 287 **Seminar: Problems in Latin American Civilization (3)** Rodriguez
Interdisciplinary seminar guided by a specialist within the methodology of his chosen discipline; each student writes a report on some aspect of a key theme (i.e., Nationalism) in Latin America's experience. Admission by permission of instructor. (Spring-day)
- 299-300 **Thesis Research (3-3)** Staff
(Academic year—as arranged; summer 1969—Spanish 299)

FOURTH GROUP

- 398 **Advanced Reading and Research (arr.)** Staff
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

399 Dissertation Research (arr.)**Staff**

Limited to Doctor of Philosophy candidates. May be repeated for credit.
(Fall and spring—as arranged; summer 1969)

Sino-Soviet Studies

See "Institute for Sino-Soviet Studies."

Slavic Languages and Literatures

Professor Helen Yakobson (Chairman)

Associate Professors Nadine Popluiko-Natov, C.A. Moser

*Assistant Professors G.A. Olkhovsky, Kosara Gavrilovic, Mykola Stepanenko,
M.A. Kandel, Irene Thompson, Mary Miller*

Assistant Professorial Lecturers Victoria Sandor, Juri Jelagin

Bachelor of Arts with a major in Russian Language and Literature (Field-of-Study).—Prerequisite: the Arts and Letters curriculum, page 76.

Required: the general requirements, pages 81–85, and the passing of the major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the political, cultural, and social backgrounds of Russian literature; Russian cultural history; the Russian language—its structure and usage. Proficiency in spoken and written Russian language is required. Students who are already proficient in Russian may, upon passing an appropriate examination, waive any or all of the first-group language courses, as well as up to six hours of second-group language courses. The Department provides a proseminar intended to assist the student in his preparation for the major examination.

Master of Arts in the field of Russian Language and Literature.—Prerequisite: the degree of Bachelor of Arts with a major in Russian Language and Literature from this University, or equivalent.

Required: the general requirements, pages 89–95. The thirty semester hours of required work must include a thesis (six semester hours). The remainder of the program is arranged in consultation with the student's adviser.

Bachelor of Arts in Education with a teaching field in Russian.—Prerequisite: the Education curriculum, page 78.

Required: the Russian option and the professional courses listed on pages 111–12, 114.

Master of Arts in the field of Linguistics.—See pages 303–5.

Placement Examination: A standardized placement examination given before registration is required of all entering students who wish to continue in college the language begun in high school. Upon completion of the examination, assignment is made to the appropriate course, with credit assigned on the usual basis.

FIRST GROUP**1–2 First-year Russian (3–3)****Yakobson and Staff**

A year course: credit toward a degree at this University given on completion of Slavic 2. Beginners' course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice. Listen-

ing comprehension and oral practice in language laboratory. Laboratory fee, \$17.50 a semester. (*First half and second half: fall and spring—day and evening; summer 1969*)

3-4 Second-year Russian (3-3)

Yakobson and Staff

A year course: credit toward a degree at this University given on completion of Slavic 4. Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics. Prerequisite: Slavic 1-2 or two years of high school Russian. Laboratory fee, \$17.50 a semester. (*First half: fall—day and evening; spring—evening. Second half: fall—evening; spring—day and evening.*)

5 Intensive Beginning Russian (6)

Thompson

Classroom (10 hours), laboratory (1 hour). Beginners' intensive course in the fundamentals of Russian phonology, structure, and vocabulary. Emphasis on active command of the spoken and written language. Maximum participation on the part of the student. Drill sessions to facilitate aural comprehension and oral expression. Graded reading and written practice. Listening comprehension and oral practice in language laboratory. Laboratory fee, \$17.50. (*Fall—day*)

6 Intensive Intermediate Russian (6)

Thompson

Classroom (10 hours), laboratory (1 hour). Intermediate intensive course in Russian morphology, syntax, and vocabulary. Emphasis on active command of the spoken and written language. Drill sessions to facilitate aural comprehension and oral expression. Graded reading and written practice. Maximum participation on the part of the student. Listening comprehension and oral practice in language laboratory. Prerequisite: Slavic 2 or 5, or equivalent. Laboratory fee, \$17.50 (*Fall and spring—day*)

7-8 Intensive Advanced Russian (6-6)

Thompson

Classroom (10 hours), laboratory (1 hour). Emphasis on vocabulary expansion. Systematic review of Russian grammar at an advanced level. Reading and discussion of literary texts, periodicals, and selected texts in social sciences. Oral reports and compositions on assigned topics. Listening comprehension practice in language laboratory. Prerequisite to Slavic 7: Slavic 4 or 6, or equivalent. Prerequisite to Slavic 8: Slavic 7. Laboratory fee, \$17.50 a semester. (*First half: fall and spring—day. Second half: spring—day.*)

9-10 Russian Conversation and Composition (3-3)

Staff

Listening comprehension; oral and written practice. Prerequisite: Slavic 4 or 6, or permission of instructor. Laboratory fee, \$17.50 a semester. (*Academic year—day and evening*)

47 Beginning Russian for Reading Examination Candidates (0)

Staff

For graduate students with little or no knowledge of Russian who intend to use the language as a research tool. No academic credit. Tuition fee, \$192. (*Fall—evening; summer 1969*)

49 Russian Readings for Nonmajor Students (3)

Staff

Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of instructor. No academic credit for graduate students. Prerequisite: Slavic 4, 6, or 47; or equivalent. (*Spring—evening; summer 1969*)

- 91-92 **Introduction to Russian Literature (3-3)** Gavrilovic
Survey of Russian literature, in translation, from earliest periods through literary masterpieces of the 19th and early 20th centuries. Lecture, recitation, and discussion—in English. (*First half and second half: fall and spring—day; summer 1969*)

SECOND GROUP

- 101-2 **Readings in Modern Russian (3-3)** Yakobson and Staff
Representative reading and translation of Soviet periodicals and selected texts in social sciences. Study of current political terminology, abbreviations, Soviet idiom. Prerequisite: Slavic 4 or 6, or equivalent. (Academic year—day)
- 109-10 **Advanced Russian Conversation and Composition (3-3)** Moser
Developing proficiency in oral and written expression. Prerequisite: Slavic 10 or equivalent. (Academic year—evening)
- 125 **Russian Linguistic Structure I (3)** Thompson
Linguistic description of Russian phonology and morphophonemics. (Fall—day)
- 126 **Russian Linguistic Structure II (3)** Thompson
Linguistic description of Russian morphology, syntax, and lexicon. (Spring—day)
- 128 **Dostoevsky, the Man and the Artist (3)** Popluiko-Natov
Sources and development of his philosophical, religious, and aesthetic ideas. His influence on Russian and Western literature. Lectures, discussions, and reports—in English. (1969-70 and alternate years: spring—evening)
- 131 **18th Century Russian Literature (3)** Moser
Survey course in the history of Russian literature from 1700 to approximately 1820. Discussion of the rise of poetry, classicism, sentimentalism; the beginnings of prose—in English. (1970-71 and alternate years: fall—evening)
- 141-42 **19th Century Russian Literature (3-3)** Stepanenko
Major Russian writers and literary trends from end of the 18th century to Chekhov: fiction, poetry, drama. Lectures, individual reports on assigned topics, and class analysis of selected works—in Russian. Prerequisite: Slavic 4 or 6, or equivalent. (1970-71 and alternate years: academic year—evening)
- 143-44 **The Russian Novel (3-3)** Moser
Genesis and development of the Russian novel. Evolution of form and techniques. Analysis of style, philosophy, and political ideology of representative novels of the 19th and 20th centuries—in English. (1969-70 and alternate years: academic year—day)
- 145-46 **The Russian Short Story (3-3)** Popluiko-Natov
Study of historical development of the short story form in Russian. Lectures, reports, and class analysis—in Russian. Prerequisite: Slavic 4 or 6, or equivalent. (1970-71 and alternate years)

151-52 20th Century Russian Literature (3-3)

Popluiko-Natov

Symbolism, acmeism, futurism, and realism: prose, poetry, drama. Class analysis of selected texts. Recitations and reports in Russian. Prerequisite: Slavic 4 or 6, or equivalent. (1969-70 and alternate years: academic year—day)

153 Turgenev (3)

Moser

Reading and discussion of Turgenev's works. Emphasis on the novels; major short stories analyzed and some time spent on his plays and other prose works—in English. (1970-71 and alternate years: fall—day)

154 Gogol (3)

Moser

Reading and discussion of Gogol's major works. Analytical study of short stories and plays in English. (1970-71 and alternate years: spring—day)

156 Leo Tolstoy, His Life and Works (3)

Popluiko-Natov

Evolution of Tolstoy's artistic and philosophical ideas. Tolstoy's impact on Russian literature and society. Lectures, reports, and classroom analysis of his major works—in English. (1970-71 and alternate years: spring—evening)

161-62 Russian Culture (3-3)

Olkhovskiy

Survey of Russian cultural heritage from origins of ancient Russia to present—in English. Lecture, recitation, discussion, and individual reports on assigned topics. (Academic year—evening)

165 Soviet Literature from the Revolution to World War II (3)

Kandel

(*Slavic Languages and Literatures 165 and 166 replace former 165 Soviet Literature*)

Basic themes, issues, literary figures of the Soviet 1920's. The fate of literature and writers under increasing state control; Five-year Plan literature. Lecture, discussion, reports—in English. (Fall—evening)

166 Soviet Literature from World War II to the Present (3)

Kandel

(*Slavic Languages and Literatures 165 and 166 replace former 165 Soviet Literature*)

Literature in wartime, under Stalinism, and in the "thaws." The new generation of dissident liberals and "underground" literature. Lecture, discussion, reports—in English. (Spring—evening)

193-94 Introduction to Slavic (non-Russian) Literature—in English (3-3)

Kandel

(*Formerly Slavic Languages and Literatures 93-94*)

An examination of non-Russian Slavic literatures from their beginnings to the present day. Emphasis on themes, ideas, and styles particular to each literature. The impact of national events and culture on each. (Academic year—evening)

197 Special Problems in Teaching Russian (3)

Yakobson

Discussion of methodology, examination of textbooks, observation of classroom procedures. Prerequisite: 18 semester hours of Russian language. (1970-71 and alternate years)

- 199-200 **Proseminar: Readings for the Major in Russian Language and Literature (3-3)** Yakobson
Conferences and group discussions. (Academic year—as arranged)

THIRD GROUP

- 206 **Old Russian Literature (3)** Moser
Survey of the development of Russian literature from earliest times to the end of the 17th century. Intensive reading and analysis of selected texts—in Russian. (1969-70 and alternate years: fall—evening)
- 215-16 **History of the Russian Literary Language (3-3)** Staff
Historical background for an understanding of phonology and morphology of Modern Russian. (Academic year—evening)
- 225 **Pushkin and the Poets of His Time (3)** Popluiko-Natov
Pushkin's predecessors; Pushkin's lyrics and dramas. Lermontov—the heir to Pushkin's poetic tradition. (1969-70 and alternate years: fall—evening)
- 253 **Seminar: Literary Criticism (3)** Popluiko-Natov
Study of leading Russian critics and their role in the development of Russian literature; the emergence of various literary schools. (1969-70 and alternate years: fall—evening)
- 254 **Seminar: Literary and Intellectual Currents (3)** Moser
Discussion of literary and intellectual developments in Russia. Major figures will be treated in their relation to the milieu of their times—in Russian. Topic for 1969-70: the 1840's. (Spring—evening)
- 255 **Seminar: Main Trends in 20th Century Russian Literature (3)** Popluiko-Natov
Study of representative works since 1900; their artistic and social value—in Russian. (1970-71 and alternate years: fall—evening)
- 256 **Seminar: Stylistics in Russian (3)** Popluiko-Natov
Study of the development of the Russian language, literary styles, and techniques: words and their aesthetic and political value, phraseological units, word order, and phrase structure. Comparative analysis of literary and nonliterary texts. (1969-70 and alternate years: spring—evening)
- 299-300 **Thesis Research (3-3)**
(Academic year—as arranged)

Sociology

Professors R.W. Stephens, I.H. Cisin, Norman Kaplan, H.J. Parry (*Research*).
R.G. Brown (*Chairman*)
Professorial Lecturer E.E. Jacobson
Associate Professor T.F. Courtless, Jr.
Associate Professorial Lecturers Engin Holmstrom, Henry Brehm
Assistant Professors C.S. Harris, Patricia Lengermann, Phyllis Stewart, J.L. Tropea

Assistant Professorial Lecturers Mona Scott, W.R. Throckmorton, Charlotte Anker

Bachelor of Arts with a major in Sociology (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, including Sociology 1, 61; and Statistics 53 or 104.

Required: in addition to the general requirements, pages 81–85, twenty-four semester hours in Sociology, which must include 141, 149, 191; and Statistics 53 or 104.

Master of Arts in the field of Sociology.—Prerequisite: a Bachelor's degree with a major in Sociology or in an approved related field. Applicants should present scores on the Graduate Record Examination, preferably including the Advanced Test in Sociology, and arrange for former professors to write letters of reference to the Graduate School of Arts and Sciences.

Required: the general requirements, pages 89–95, including Sociology 142, 231, 233–34. All courses must be approved in advance by the adviser.

Doctor of Philosophy fields of study in Sociology: Complex Organizations, Political Sociology, Social Organization, Social Research Methods, Sociological Theory, Sociology of Education, and Urban Sociology.—See pages 89–93, 95–97, for requirements for the degree.

Departmental prerequisite: Sociology 1 and either 2 or 61 are prerequisite to all second- and third-group courses in Sociology.

FIRST GROUP

1–2 Introductory Sociology (3–3)

First half: general principles of sociology; development of culture and personality, impact of groups and institutions on man's social behavior. *Survey of fields within sociology. Second half:* analysis of major social problems confronting the United States; factors producing social problems, their nature and treatment. (First half: fall—day and evening; spring—day; summer 1969. Second half: fall—day; spring—day and evening; summer 1969.)

61 Development of Social Thought (3)

Examination of concepts and theories relevant to the nature of society and human relationships from ancient writings to the 20th century. (Fall and spring—as arranged; summer 1969)

SECOND GROUP

110 The Sociology of Work (3)

Introductory survey of industrial sociology; sociology of occupations and professions; industry-community relations; and analysis of large, complex organizations. (Spring—day) Brown

124 Medical Sociology (3)

Sociological factors and processes which relate to physical and mental health and disease, analysis of patterned social relationships in the field of health and medicine, the hospital as a social system. (Fall—day) Brehm, Brown

125 Sociology of Religion (3)

Introduction to history of the discipline; analysis of reciprocal impact of secular upon religious and religious upon secular institutions. (Not offered 1969–70) Yeide

- 126 **Urban Sociology (3)** Stephens
Place of the city in larger society; growth of the city, problems of urban living, group life, personality, urban housing, city planning, and suburban development. (Spring—day; summer 1969)
- 127 **Population Problems (3)** Stephens
Composition of populations, trends in population growth and population pressure, factors producing population movements, effects of migration, population policies—eugenics and birth control. (Fall—day)
- 129 **Race and Minority Groups (3)** Stephens
Analysis of relationships between dominant and minority groups in society, particularly in the United States; nature and range of problems; analysis of the phenomenon of prejudice. (Fall or spring—as arranged; summer 1969)
- 130 **Social Stratification: Class and Status (3)** Stephens
Nature of class structure, patterns of status, prestige relations, differential class behavior, analysis of comparative social structure and social mobility. (Spring—day)
- 131 **Social Institutions (3)** Staff
Functional analysis of basic social institutions: family, education, religion, economy, and state in the structure of American society. (Spring—evening)
- 133 **Sociology of Education (3)** Tropea
Analysis of educational systems from an institutional and organizational perspective and as agencies of socialization; relationships of education in general to society, including technological, communal, and subcultural components. (Fall—evening)
- 134 **Marriage and the Family (3)** Stephens
Courtship as a social process, marriage and marital adjustment, development of the family, parent-child relations, family problems, disorganization, divorce and family reorganization. (Spring—evening)
- 135 **Juvenile Delinquency (3)** Courtless, Tropea
Factors producing delinquency, juvenile detention, the juvenile court, training schools, treatment of offenders. (Fall or spring—day; summer 1969)
- 136 **Criminology (3)** Courtless
(Formerly Sociology 51)
Nature and distribution of crime, police and court systems, prisons and reformatories; treatment and prevention of crime. (Fall—day)
- 137 **Sociology of Law (3)** Courtless
Law as a social phenomenon and agency of social control. Problems of legal concepts, doctrine, and institutions. (Spring—evening)
- 138 **Social Disorganization (3)** Cisín, Tropea
Analysis of factors contributing to disruption of social groups, institutions, and communities; study of attempts to establish social controls to prevent, minimize, or mitigate the effects of socially disruptive conditions and events. (1969-70 and alternate years: fall and spring—as arranged)

139 Society and the Deviant (3)

Tropea

Analysis of relationships of society, socialization, and deviancy. Social responses to deviancy and criminal offenders; rehabilitative programs in community, courts, and schools. (Spring—day)

141 Social Research Methods (3)

Cisin, Stewart

Introduction to scientific method in the development of social theory and the solution to social problems. (Fall and spring—as arranged)

142 Advanced Social Research Methods (3)

Cisin

Translation of concepts into indices and the analysis and interpretation of research results, measurement, scales and scoring, hypothesis testing. Prerequisite: Sociology 141. (Fall and spring—as arranged)

144 Public Opinion and Mass Communication (3)

Parr

Communication process with emphasis on international communications, propaganda, and mass media; measurement of propaganda campaigns. (Fall—day)

147 Organizational Theory and Behavior (3)

Stewart

(Formerly *Sociology of Complex Organizations*)

Introductory survey of traditional, contemporary theories and research describing behavior in large, complex organizations and their impact on American social life. (Fall—day; summer 1969)

149 Modern Sociological Theory (3)

Lengermann, Stephens

(Formerly *Development of Social Theory*)

Systematic study of contemporary schools of sociological theory, both European and American development; evaluation of scientific contributions of each school. Prerequisite: Sociology 61. (Fall and spring—day; summer 1969)

191 Current Emphases in Sociology (3)

Staff

Analysis and evaluation of recent developments in the general field of sociology and a review and discussion of basic concepts. Required course for all sociology majors in the senior year. (Fall—day; spring—day and evening; summer 1969)

THIRD GROUP**210 Seminar: Political Sociology (3)**

Lengermann

Review of current social science theory and knowledge about political processes, including concepts of power, influence, authority, decision-making, and communication. Primary focus on the American case, with emphasis on the urban context; introduction of some cross-national and community-level material. (Spring—evening)

211 Seminar: Social Change (3)

Lengermann

A macro-social, comparative, and interdisciplinary analysis of the processes of social change leading to and resulting from urbanization, including changes in motivation, values, and political, economic, and communication systems; the implication of such changes for other areas of institutionalized behavior. (Fall—evening)

- 220 **Religious Institutions in the United States (3)** Yeide
Structural variety of religious institutions and patterns of interaction between religious and secular institutions in contemporary American life. (Spring—evening)
- 227 **Seminar: Sociology of Poverty (3)** Jacobson
Problems of definition and analysis with emphasis on emerging concepts and hypotheses; attention to methodological and research questions; implications for public policy and programming; field experience. (Fall—evening)
- 228 **Seminar: Urban Social Problems (3)** Jacobson
Detailed examination of the relationship between various institutions and problems of the city and urban society. Focus on different institutions or problems in different semesters. (Spring evening)
- 231-32 **Seminar: Advanced Social Research Methods (3-3)** Cisin
Intensive study and evaluation of current trends in the methodology of social research. Discussion on individual student projects and recently published research. (First half: spring—as arranged. Second half: not offered 1969-70.)
- 233-34 **Seminar: Theory Construction and Application (3-3)** Lengermann
Critical examination of the elements of current theories in the social sciences with the major objective of developing general principles of theory construction; consideration of the functions of theory in sociological research. (Academic year—as arranged)
- 235 **Seminar: General Systems Theory (3)** Tropea
Review of the literature associated with general systems theory and its relation to theory construction and research in the social sciences. Systematic inquiry into the implications of a behavioral/systems approach to the analysis and management of societal problems, particularly urban problems. Interdisciplinary focus. (Fall or spring—as arranged)
- 237 **Seminar: Family Relations (3)** Staff
Recent research and theory on aspects of family structure and functioning, their antecedents in the larger social order, and their consequences for individual family members. Special projects and papers. (Spring—evening)
- 240 **Sociology of Occupations (3)** Brown, Harris
Analysis of occupational roles and structures and changes within them; recruitment and training; adjustment problems at various stages of the career; interrelationships of stratification systems, life styles, and occupations. (Fall—evening)
- 242 **Sociology of Health and Illness (3)** Brown
Sociological analysis of social and cultural factors in the etiology and treatment of illness. Specifically covers social epidemiology, health and the community, the patient and treatment, and social and cultural theory in health and illness. (Spring—evening)
- 244 **Seminar: American Class Structure (3)** Stephens
Analysis of the class structure of American society in continuity and change. Critical review of theories of class, of the methodology of class,

and of research reporting social and psychological correlates of class
(Fall—evening)

248 Seminar: Organizational Theory and Behavior (3) Harris, Stewart
(Formerly *Comparative Analysis of Complex Organizations*)

Advanced analysis of theory and behavior in complex organizations relative to defining organizations, examining basic social processes and their relationship to the cultural environment. (Spring—day)

250 Seminar: Science and Society (3) Kaplan

Analysis of sociocultural and political factors influencing and affecting the development and structure of science. Development of national science policies; relationship of universities, government, and science in the context of society. (Spring—evening)

259 Law and Criminology I: Search for the Causes of Criminal Behavior (3) Courtless

Role which criminological knowledge of crime causation may play in assisting lawyers to appraise the effectiveness of various alternative social and legal devices in controlling deviant behavior. The search for factors related to criminal behavior will be developed historically, with emphasis on current causal theories developed by various disciplines. Model as well as operational penal codes, sentencing and probation practices, and specialized facilities will be analyzed in terms of their relationship to such causal theories. (Fall—evening)

†260 Interdisciplinary Seminar on the Juvenile Court (3) Ferster

Sociological, psychological, and psychiatric views on prevention, diagnosis, and treatment; analysis of statutes, court rules, and reported cases pertaining to delinquency, dependency, custody, and child abuse; emphasis on the role of the lawyer in this court. (Fall—evening)

†261 Law and Criminology II: Society's Responses to the Criminal Offender (3) Courtless

Study of the development and current use of society's three major approaches to the handling of offenders: punitive, mechanical, and correctional. Emphasis on society's changing responses to criminal and delinquent behavior, and research findings concerning effectiveness of these responses. Analysis of treatment strategies to facilitate communication between members of the legal profession and behavior scientists charged with effectuating these strategies. (Spring—evening)

295 Research (arr.) Staff

May be repeated once for credit. (Fall and spring—as arranged; summer 1969)

299-300 Thesis Research (3-3) Staff

(Academic year—as arranged; summer 1969)

* Same as Law 475 (2). Graduate students registering for Sociology 250 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.
† Same as Law 487 (2). Graduate students registering for Sociology 260 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.
‡ Same as Law 476 (2). Graduate students registering for Sociology 261 make special arrangements with the instructor for supplementary assignments equivalent to one additional semester hour.

FOURTH GROUP

398 **Advanced Reading and Research** (arr.) Staff

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

399 **Dissertation Research** (arr.) Staff

Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Spanish

See "Romance Languages and Literatures."

Special Education

Professor Perry Botwin (*Chairman*)

Associate Professors Bertice Cornish, R.S. Cottrell, Jr.

Assistant Professors M.G. Van Dyke, R.W. Prouty, Margaret Moss, Wretha

Petersen, Judith Leitner

Instructors Kayte Fearn, Charmaine Ciardi

Bachelor of Arts in Education with (1) a major in secondary education combined with a minor teaching field in Special Education and (2) a major in elementary education with an area of specialization in Special Education.—See pages 101–4, 113, 114.

Master of Arts in Education with a field in Special Education.—See pages 116–19.

Education Specialist.—See pages 119–20.

Doctor of Education.—See pages 120–23.

THIRD GROUP

201 **Introduction to the Education of Exceptional Children** (3) Botwin

Survey course to acquaint prospective teachers with the exceptional child and to help them become aware of the various educational modifications necessary to accommodate such children in a school program. (Fall—evening; summer 1969)

202 **Nature and Needs of the Mentally Retarded** (3) Prouty

Nature and needs of children with varying degrees of retardation. Causation and diagnosis of retardation and its psychological and sociological implications as they apply to the child, his parents, and the family constellation. Admission by permission of instructor. (Fall—evening; summer 1969)

203 **Teaching Mentally Retarded Children** (3) Fearn

Educational methods and curricula for the mentally retarded at different maturational levels. Organization and planning of instructional activities; selection and preparation of materials. Admission by permission of instructor. (Fall—evening; summer 1969)

- 240 **Educational Programming for Children with Behavioral Problems (3)** Van Dyke
(Formerly Nature and Needs II: the Emotionally Disturbed)
 Analysis of educational provisions for children with behavioral problems through study of ecological considerations in the light of contemporary special education theory. Admission by permission of instructor. (Fall—evening; summer 1969)
- 241 **Preprofessional Internship: Emotionally Disturbed Children (3)** Van Dyke, Leitner
 Practicum experience early in the training sequence; observation of, and interaction with, emotionally disturbed children under the direction of qualified teachers in a field setting and the supervision of the University staff. Admission by permission of instructor. (Fall—as arranged; summer 1969)
- 242 **Clinical Teaching of Emotionally Disturbed Children (3)** Leitner
 Lectures and discussions exploring various psychoeducational techniques of teaching emotionally disturbed children and adolescents, interpersonal interaction between teachers and disturbed children, use of group factors in the teaching-learning process, and selection of appropriate teaching methods and materials. Admission by permission of instructor. (Fall—evening; summer 1969)
- 243 **Clinical Teaching Laboratory (3)** Leitner
 Analysis of teaching methods and styles. Seminar (alternate weeks); field work and video-tape sessions as arranged. Admission by permission of instructor. (Fall—evening)
- 250 **Advanced Specialized Teaching Techniques and Materials (3)** Fearn
 Lectures and laboratory practice in specialized techniques and materials for exceptional children. Admission by permission of instructor. (Fall—evening; summer 1969)
- 251 **Psychosocial Considerations in Special Education (3)** Prouty
 Psychosocial considerations in the education of exceptional children. Admission by permission of instructor. (Fall—evening; summer 1969)
- 252 **Professional Internship: Special Education (3)** Prouty, Fearn
 Supervised internship in school and/or clinic settings. Admission by permission of instructor. (Fall—evening; summer 1969)
- 260 **Characteristics of Children with Crippling or Other Health Impairment (3)** Ciardi
(Formerly Nature and Needs III: Crippled or Health-Impaired Children)
 Characteristics of children whose needs must be met in special classroom settings in home, school, and hospital. Principles of learning as they affect the education and diagnosis of these children. Psychological implications of crippling conditions. Prerequisite: Special Education 201 and permission of instructor. (Fall—evening; summer 1969)
- 261 **Teaching Crippled, Cerebral-palsied, and Other Health-impaired Children (3)** Ciardi
 Programs, methods, and materials for teaching children with orthopaedic, cerebral-palsied, and other health-related disorders. Admission by permission of instructor. (Fall—evening; summer 1969)

- 262 **Preprofessional Internship: Children with Crippling Conditions, Health Impairment, or Cerebral Palsy (6)** Ciardi
(Formerly Education of the Cerebral Palsied and Other Neurologically Impaired (3))
 Practicum experience during initial period of preparation provides opportunity for observation and interaction with children placed in special programs. Minimum of 210 clock hours required. Admission by permission of instructor. (Fall—evening)
- 280 **Characteristics of Children with Learning Disabilities (3)** Petersen
 Identification of disabilities which may interfere academically, socially, or emotionally with children's normal development. Admission by permission of instructor. (Fall—evening; summer 1969)
- 281 **Diagnosis of Educational Needs of Children with Learning Disabilities (3)** Petersen
 Study of available instruments for making educational assessments and diagnostic evaluations. Admission by permission of instructor. (Fall—evening)
- 282 **Teaching Children with Learning Disabilities (3)** Petersen
 Programs, methods, and materials for the educational needs of children with learning disabilities. Admission by permission of instructor. (Spring—evening; summer 1969)
- 290 **Practicum in Teaching the Mentally Retarded (6)** Prouty, Fearn
 Supervised student teaching in classrooms for mentally retarded children under the direction of a qualified teacher and the supervision of the University staff. Minimum of 210 clock hours required. Admission by permission of instructor. (Spring—as arranged)
- 291 **Practicum in Teaching the Emotionally Disturbed (6 to 9)** Van Dyke, Leitner
 Supervised student teaching in programs for emotionally disturbed children under the direction of a qualified teacher and the supervision of the University staff. Minimum of 210 clock hours required. Admission by permission of instructor. (Spring—as arranged; summer 1969—Special Education 291 (6))
- 292 **Practicum in Teaching Children with Crippling Conditions, Health Impairment, or Cerebral Palsy (6)** Ciardi
 Supervised student teaching in classroom for children with orthopaedic, neurological, and health-related disabilities. Minimum of 210 clock hours required. Admission by permission of instructor. (Spring—as arranged)
- 293 **Practicum in Teaching Disadvantaged Children (6)** Fearn
 Supervised classroom teaching of disadvantaged children. Minimum of 210 clock hours required. Admission by permission of instructor. (Spring—as arranged)
- 294 **Practicum in Diagnostic and Prescriptive Teaching (6)** Prouty, Fearn
 Supervised diagnostic and prescriptive teaching. Minimum of 210 clock hours required. Admission by permission of instructor. (Spring—as arranged)

- 295 Practicum in Teaching Children with Learning Disabilities (9)** Petersen
Supervised classroom teaching of children with learning disabilities. Minimum of 210 clock hours required. Admission by permission of instructor. (Spring—as arranged)
- 297 Individual Study in Special Education (3)** Staff
(Formerly *Research in Special Education*)
Individual study or research under guidance of staff member. Program and conferences arranged with adviser. May be repeated once for credit. Admission by permission of adviser. (Fall or spring—as arranged)
- 303 Administration and Supervision of Special Education (3)** Botwin
Philosophy and nature of special education; program organization, administration, and development. Surveying local-level needs; program evaluation and supervision. Admission by permission of instructor. (Spring—evening; summer 1969)
- 304 Recent Research and Trends in Exceptional Children (3)** Moss
Emphasis on research methodology and considerations. The unique problems of doing research with exceptional children. Sources of research funds and procedures for obtaining them. Admission by permission of instructor. (Spring—evening)
- 306 Guidance and Counseling of Exceptional Children (3)** Cornish
Educational, mental, social, and vocational guidance of exceptional children. Admission by permission of instructor. (Fall—evening)
- 308 Instructional Media and Technology in Education: Past, Present, and Future Relationships and Implications (3)** Cottrell
A review and consideration of technological developments as they affect special education; consideration of operating principles of various kinds of hardware, including printing, audio-visual equipment, television, and computers; status of software for use with hardware. Admission by permission of instructor. (Fall—evening; summer 1969)
- 342 Advanced Seminar: Emotional Disturbance (3)** Van Dyke
Concepts in the education of emotionally disturbed children. Admission by permission of instructor. (Spring—evening; summer 1969)
- 343 Psychoeducational Diagnosis of Children with Behavior or Learning Difficulties (3)** Van Dyke
Laboratory course designed to teach educational diagnosis of children who present behavior or learning problems in the schools. Admission by permission of instructor. (Fall—evening; summer 1969)
- 345 Public School Consultation and Program Planning for Emotionally Disturbed Children (3)** Leitner
Exploration of mental health consultation models in public schools, inservice training programs for educational personnel, and special programming for behaviorally disordered children in the schools. Lectures, discussion, and extensive field work experience. Admission by permission of instructor. (Spring—as arranged)

- 350 **Diagnostic and Prescriptive Teaching (3)** Prouty
Theory and practice in diagnostic and prescriptive teaching. Rationale, models, techniques, and problems relevant to implementation. Admission by permission of instructor. (Fall—evening; summer 1969)
- 362 **Advanced Seminar: Learning Disabilities and Neurological Impairment (3)** Cornish
Study in depth of learning disabilities. Admission by permission of instructor. (Spring—evening)
- 364 **Curriculum Needs and Teaching Techniques for Children with Neurological Impairment and Other Learning Disabilities (3)** Petersen
Educational needs; materials, techniques, and procedures. Admission by permission of instructor. (Fall—evening)
- 365 **Field Work in Setting Up an Educational Program for Children with Neurological Impairment and Other Learning Disabilities (3)** Petersen
Practicum experience in a public school setting. Prerequisite: Special Education 364 and permission of instructor. (Spring—as arranged)
- 370 **Intrapersonal Dynamics in Special Education (3)** Prouty, Van Dyke
Small group exploration of intrapersonal factors essential to understanding roles and interpersonal techniques in teaching exceptional children. Admission by permission of instructor. (Spring—as arranged; summer 1969)

FOURTH GROUP

- 453-54 **Doctoral Internship in Special Education (3-3)** Staff
Supervised professional internship in college teaching, administration, supervision, or private agency function. Each internship individually arranged. Prerequisite: doctoral candidacy in Special Education or permission of instructor. (Academic year—as arranged)
- 490 **Interdisciplinary Doctoral Seminar in Special Education (3)** Staff
For advanced doctoral students. Consideration of major issues of philosophy, policy, and practice in special education. Admission by permission of adviser. (Spring—day)
- 491 **Dissertation Research (arr.)** Staff
(Fall and spring—as arranged; summer 1969)

Speech and Drama

Professors G.F. Henigan (*Chairman*) (*Director of Forensics*), E.L. Stevens
 Professorial Lecturers Zelda Fichandler, Gilbert Herer
 Associate Professors Lee Bielski, J.W. Hillis (*Director of Speech Pathology and Audiology*), L.S. Bowling, Sr., W.M. Reynolds
 Associate Professorial Lecturer A.A. Nilles
 Assistant Professors Robert Honeygosky, Joan Regnell, David Kieserman

Instructors Diane Majerus, T.E. Harris, Thomas Zaucha, N.C. Garner
Lecturers Lois Richards, L.G. Loftus, Jacqueline Dudley

Bachelor of Arts with a major in Dramatic Art (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, including twelve semester hours in basic courses in Speech and Drama, and six hours selected from English 51–52, 71–72, or 91–92.

Required: the general requirements, see pages 81–85, including the passing of a speech proficiency test early in the program; Speech and Drama 101 and 102; and a minimum of eighteen additional hours in theater arts and dramatic literature as approved by the adviser.

Bachelor of Arts with a major in Speech (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, including Speech and Drama 1, 2, 11, 32.

Required: the general requirements, see pages 81–85, including the passing of a speech proficiency test; Speech and Drama 101, 121, 126, 141; and a minimum of twelve additional hours in second-group courses in speech arts and related courses, as approved by the adviser.

American Civilization 101 is recommended as a senior-year elective for Speech majors.

Bachelor of Arts with a major in Speech Pathology and Audiology (Departmental).—Prerequisite: the Arts and Letters curriculum, page 76, including Speech and Drama 1, 2, 11, 32.

Required: the general requirements, see pages 81–85, including the passing of a speech proficiency test; Speech and Drama 101, 121, 169, 171; and a minimum of twelve additional hours in second-group courses in speech pathology and audiology, as approved by the adviser.

Master of Arts in the field of Speech Pathology and Audiology.—Prerequisite: the degree of Bachelor of Arts with a major in Speech Pathology and Audiology from this University, or equivalent.

Required: the general requirements, pages 89–95.

Master of Fine Arts in the field of Dramatic Art.—Prerequisite: the degree of Bachelor of Arts from this University, or equivalent.

Required: the general requirements, see pages 89–95, twenty-four semester hours of second- and third-group courses in drama and dramatic literature and a creative or research thesis. The program may include six to twelve hours in theater offered at the Arena Stage. For detailed information, consult the Chairman of the Department.

Bachelor of Arts in Education with a teaching field in Speech and Drama.—Prerequisite: the Education curriculum, page 78.

Required: the Speech and Drama option and the professional courses listed on pages 113–14.

Master of Arts in the field of Linguistics.—See pages 303–5.

Speech and Hearing Therapy: See Speech and Hearing Clinic, page 52.

Clinical Certification: The Department of Speech and Drama offers preparation for certificates of clinical competence, issued by the American Speech and Hearing Association, in speech pathology and/or audiology. For details consult the Department.

FIRST GROUP

A American Speech for Foreign Students (3)

Class limited to foreign-born students. Instruction in the formation of the sounds of spoken English, with emphasis on rhythm and inflection. International Phonetic Alphabet used. Recording fee, \$5. (Fall and spring—evenings)

Bielski

1 Effective Speaking (3)**Staff**

Preparation and delivery of extempore speeches, developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, \$2. (Fall and spring—day and evening; summer 1969)

2 Persuasive Speaking (3)**Reynolds**

Continuation of Speech and Drama 1, emphasis on the principles and techniques—logical and psychological—of accommodating ideas to an audience and audiences to ideas. Prerequisite: Speech and Drama 1. (Fall and spring—day)

11 Voice and Diction (3)**Bielski and Staff**

Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to study of sounds of English, standards of speech. Class instruction in problems of rate, volume, pitch, quality. Recording fee, \$4. (Fall and spring—day and evening; summer 1969)

32 Oral Reading (3)**Henigan and Staff**

Reading to others, theory and practice in problems of interpreting the printed page. Prerequisite: Speech and Drama 11. Recording fee, \$2. (Fall—and spring—day; summer 1969)

SECOND GROUP**101 Phonetics (3)****Majerus**

Phonetic and phonemic alphabets and their applications to student's own speech improvement and to such fields as theater, public speaking, speech correction, radio, television, and foreign languages. Prerequisite: Speech and Drama 11. Recording fee, \$4. (Fall and spring—day)

102 Oral Interpretation of Literature (3)**Kieserman**

Theory and practice in problems of communicating meaning and emotion. Selections for study include poetry, prose, and drama. Prerequisite: Speech and Drama 32. Recording fee, \$2. (Spring—day)

121 Group Discussion and Conference Leadership (3)**Stevens**

Process of thinking and problem solving in committees and small groups; methods of leading discussions and conferences. Prerequisite: 6 hours of speech or permission of instructor. (Fall and spring—day; summer 1969)

126 Public Discussion and Debate (3)**Reynolds**

Principles and types of public discussion and debate; practice in argumentative speaking on questions of current interest. Prerequisite: 6 hours of speech or permission of instructor. (Spring—day)

127-28 Advanced Debate Practice (1-1)**Henigan**

Admission by permission of instructor, after one semester of satisfactory participation in intercollegiate debate program. May be repeated for total of 4 semester hours. (Academic year—as arranged)

133-34 Radio and TV Broadcasting (3-3)

Study of the development of radio and TV industries, station organization and management, equipment, production techniques; practice in prepara-

- tion and performance of radio programs. Recording fee, \$5 a semester. (Academic year—evening)
- 135-36 **Radio Workshop (1-1)** Loftus
Practical work in campus radio station. (Academic year—as arranged)
- 141 **Public Speaking: Advanced Forms (3)** Henigan
Preparation and presentation of speeches for formal occasions with emphasis on the psychology of the audience. Prerequisite: 6 semester hours of speech. (Not offered 1969-70)
- 145 **Speech Criticism (3)** Reynolds
Survey of rhetorical criticism from Cicero to Kenneth Burke, illustrated and interpreted through the study of representative speeches in the history of British and American Public Address. Admission by permission of instructor. (Fall—day)
- 151 **Stagecraft (3)** Garner
Lecture (2 hours), laboratory (1 hour). Theories and practicum in the technical aspects of production. (Fall—day)
- 152 **Advanced Stagecraft (3)** Garner
Lecture (2 hours), laboratory (1 hour). Theories and practicum in stage lighting and contemporary devices and effects. (Spring—day)
- 153 **Acting (3)** Garner
Study and practice in fundamentals of acting technique. Prerequisite: Speech and Drama 32. Laboratory fee, \$5. (Fall—day)
- 154 **Play Direction (3)** Garner
Fundamentals of play direction. Under supervision of instructor, students prepare one-act plays for presentation. Prerequisite: Speech and Drama 153. Laboratory fee, \$5. (Spring—day)
- 155-56 **Play Production Practice (1-1)** Staff
Practical work in theater. Admission by permission of instructor. (Academic year—as arranged; summer 1969—Speech and Drama 155)
- 157 **Workshop in Producing Shakespeare (2)**
Participation as an apprentice in minor role or technical work with an Equity Company in the Shakespeare Summer Festival production in the outdoor Sylvan Theatre at the Washington Monument. Hours dependent on Company rehearsals and performances. (Summer 1969)
- 165-66 **History of the Theater (3-3)** Nilles
General survey: Classical, Medieval, Renaissance, later English and Continental, and Modern theater. (Academic year—evening)
- 169 **Creative Dramatics (3)** Kieserman
Study of creative dramatics and its use as a learning tool. (Fall—day; summer 1969)
- 170 **Children's Theater (3)** Kieserman
Theory and practice in creating and producing plays for children. (Fall—day)

- 171 Introduction to Speech Pathology and Audiology (3)** Regnell
Survey of the disorders of speech and hearing, including symptomatology, testing, causation; emphasis on problems encountered by the classroom teacher. (Fall—day)
- 172 Speech Pathology I (3)** Regnell
Pathologies and therapeutic procedures in articulatory and voice disorders and cleft palate. Prerequisite: Speech and Drama 171. (Spring—day)
- 173 Speech Pathology II (3)** Honeygosky
Pathologies and therapeutic procedures in stuttering and disorders of central or peripheral nervous systems. Prerequisite: Speech and Drama 172. (Fall—day)
- 176 Speech, Hearing, and Language Development (3)** Honeygosky
Study of normal speech and auditory function from prenatal development through the emergence of language. (Fall—day)
- 182 Introduction to Audiology (3)** Majerus
(Formerly *Hearing Problems and Testing of Hearing*)
Overview of the field of audiology to include a review of sound and its properties, anatomy and physiology of auditory system, and methods and procedures of pure tone and speech audiometry, with emphasis on their application to the study of hearing disorders. Demonstration and practicum with the pure tone audiometer. (Fall—day)
- 183 Clinical Procedures in Speech and Hearing (1)** Staff
Method, theory, and practice in preparation of therapeutic objectives and materials; practice and observation in speech and hearing evaluation. May be repeated for a total of 3 semester hours. Prerequisite: Speech and Drama 172 or 182. (Fall and spring—as arranged; summer 1969)
- 184 Clinical Practice in Speech and Hearing (1)** Staff
Supervised case work in speech and hearing—the University Speech and Hearing Clinic and selected off-campus facilities. May be repeated for a total of 3 semester hours. Prerequisite or concurrent registration: Speech and Drama 183. (Fall and spring—as arranged; summer 1969)

THIRD GROUP

- 251-52 Play Preparation and Presentation (arr.)** Staff
Observation and participation in theater production: elements of stagecraft and design, principles and techniques of acting, problems in directing plays. May be repeated for a total of 12 semester hours. Admission by audition or interview. (Academic year—as arranged)
- 258 Theater Management (2 to 4)** Staff
Theory and practice in the psychology of handling the public: promotion, box office and house management. Admission by interview. (Fall and spring—as arranged)
- 270 Seminar: Children's Theater (3)** Kieserman
Theoretical and practical problems of play production for child audience. (Spring—evening)

- 275 **Research Methods in Speech Pathology and Audiology** (3) Hillis
Study of methods and techniques employed in speech and hearing research. (Fall—day)
- 277 **Advanced Clinical Procedures in Speech and Hearing** (arr.) Staff
(Fall and spring—as arranged; summer 1969)
- 278 **Advanced Clinical Practice in Speech and Hearing** (arr.) Staff
(Fall and spring—as arranged; summer 1969)
- 279 **Anatomy and Physiology of Speech and Hearing** (3) Bowling
Study of structures and pathologies of speech and hearing. Laboratory fee, \$15. (Fall—evening)
- 280 **Neurological Speech and Language Disorders** (3) Staff
Evaluation and therapy for speech and language disorders resulting from neurological pathology: aphasia, apraxia, dysarthria, and related disorders. Laboratory fee, \$7.50. (Fall—evening)
- 281 **Advanced Clinical Audiology** (3) Bowling
Principles and methods underlying assessment of auditory disorders with particular emphasis on bone conduction, masking, and speech intelligibility. Clinical implications, tests, demonstration, and practicum. Laboratory fee, \$7.50. (Fall—evening)
- 282 **Special Auditory Tests** (3) Bowling
Special speech and pure tone audiometric techniques for differentiating conductive, cochlear, and retro-cochlear lesions, for identifying functional hearing losses. Clinical application of tests and interpretation of results. Laboratory fee, \$7.50. (Spring—evening)
- 283 **Community Programs in Speech and Hearing** (3) Heref
Methods and procedures for management of hearing and speech programs. review of hearing conservation and monitoring programs and operational aspects of clinical programs designed to meet the needs of individuals with communicative disorders. Laboratory fee, \$7.50. (Fall—evening)
- 284 **Experimental Phonetics** (3) Hillis
Consideration of research methodology and published research in the study of speech production and reception. Laboratory fee, \$7.50 (Spring—day)
- 285 **Hearing Aids** (3) Majerus
Discussion of hearing aid characteristics and electroacoustic measurements; hearing aid effectiveness in improving communicative efficiency; procedures for selection and clinical evaluation of hearing aids; counseling of the patient. (Spring—evening)
- 286 **Evaluation of Speech and Language Disorders** (3) Honeygosky
Techniques in examination, history taking, patient counseling, and management. Laboratory fee, \$5. (Spring—day)
- 288 **Aural Rehabilitation** (3) Bowling
Systems, principles, and methodologies of auditory training and speech reading to include development of lesson plans and their application in

resolving communication problems of acoustically-handicapped individuals. Laboratory fee, \$7.50. (Fall—day)

291 Seminar: Speech Pathology (3) Staff

Offered in such areas as articulatory problems and delayed speech, aphasia, voice difficulties and cleft palate, stuttering, cerebral palsy, and allied disorders. May be repeated for credit. (Spring—evening; summer 1969)

292 Seminar: Audiology (3) Staff

Offered in such areas as theories of audition, special auditory tests, aural rehabilitation, psychoacoustics. May be repeated for credit. (Spring—evening; summer 1969)

294 Independent Research in Dramatic Art (arr.) Staff

May be repeated for credit. (Fall and spring—as arranged; summer 1969)

295 Independent Research in Speech and Hearing (arr.) Staff

May be repeated for credit. (Fall and spring—as arranged; summer 1969)

299-300 Thesis Research (3-3) Staff

(Academic year—as arranged; summer 1969)

Statistics

Professors E.H. Johnson (*Emeritus*), H.F. Bright, Solomon Kullback (*Chairman*), H.W. Lilliefors

Professorial Lecturers Samuel Greenhouse, Morton Kupperman, W.W. Wolman

Associate Professors A.D. Kirsch, R.H. Shumway, C.T. Ireland

Associate Professorial Lecturers Sidney Armore, Selig Starr, M.A. Schwartz

Assistant Professor R.E. Thomas

Adjunct Assistant Professor J.K. Kern

Assistant Professorial Lecturers Fred Frishman, R.L. Beatty

Lecturers Bert Levy, William Rutiser

Bachelor of Arts or Bachelor of Science with a major in Applied Statistics (Departmental).—Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 76, including Mathematics 23 or 31; Statistics 91, 97.

Required: the general requirements, pages 81-85, including Mathematics 24, or 32 and 34; Statistics 113, 117, 118, 155, 157-58, and six additional hours of second-group Statistics courses selected with the approval of the adviser; a minimum of twenty-four semester hours including Mathematics 124, and courses in other departments approved by the adviser as contributing to a well-organized program. For further details, consult the adviser.

Bachelor of Arts or Bachelor of Science with a major in Mathematical Statistics (Departmental).—Prerequisite: the Arts and Letters or the Science curriculum, respectively, page 76, including Mathematics 23 or 31; Statistics 91.

Required: the general requirements, pages 81-85, including Mathematics 24, or 32 and 34; Statistics 117, 118, 157-58, 189-90, and six additional hours of second-group Statistics courses selected with the approval of the adviser; a minimum of twenty-four semester hours, including Mathematics 124, 139, 140, and 157 (Mathematics 250 is recommended), and courses in other departments approved by the

adviser as contributing to a well-organized program. For further details, consult the adviser.

Master of Science in the field of Applied Statistics.—Prerequisite: a Bachelor's degree with a major in Applied Statistics at this University, or equivalent. If undergraduate study did not include equivalent of required courses at this University, those courses must be taken as prerequisite to graduate study.

Required: the general requirements, pages 89–95, and a thesis, Statistics 299–300. The program consists of at least twelve semester hours of statistics, and may include appropriate other courses in an area of interest to the candidate, to be selected in consultation with the adviser.

Master of Arts in the field of Mathematical Statistics.—Prerequisite: a Bachelor's degree with a major in Mathematical Statistics at this University, or equivalent. If undergraduate study did not include equivalent of required courses at this University, those courses must be taken as prerequisite to graduate study.

Required: the general requirements, pages 89–95, including Statistics 201–2 or 257–58 and a thesis, Statistics 299–300. The remaining eighteen hours must be selected in consultation with the adviser.

Doctor of Philosophy fields of study in Mathematical Statistics: Biometrics, Design of Experiments, Econometrics, Information Theory, Multivariate Analysis, Operations Analysis, Sampling, and Statistical Inference.—See pages 89–93, 95–97, for requirements for the degree.

Bachelor of Business Administration with a major in Business and Economic Statistics.—See pages 128–30, 134–35.

Master of Arts in the field of Linguistics.—See pages 303–5.

Master of Arts in Government in the field of Business and Economic Statistics.—See pages 136–39, 144.

Departmental prerequisite: One entrance unit in algebra is prerequisite to all first-group courses in Statistics.

FIRST GROUP

49 The Language of Statistics (0)

For doctoral students as a minimum option in lieu of a foreign language.
No academic credit. Tuition fee, \$256. (Summer 1969)

*51 Introduction to Business and Economic Statistics (3)

Lecture (3) hours, laboratory (1) hour. Frequency distributions, descriptive measures, probability, sampling, estimation, tests of hypotheses, correlation, time series, index numbers. Laboratory fee \$9. (Fall and spring—day and evening; summer 1969) Staff

*52 Mathematics of Finance (3)

Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation. (Spring—day) Staff

*53 Introduction to Statistics in Psychology and Education (3)

Lecture (3) hours, laboratory (1) hour. Frequency distributions, descriptive measures, probability, sampling, estimation, tests of hypotheses, correlation, analysis of variance. Laboratory fee, \$9. (Fall—day, spring—day and evening; summer 1969) Staff

* Statistics 51, 53, and 91 are related in their subject matter, and credit hours for only one of the three may be applied toward a degree. Statistics 52 lies outside of this group, and may be taken for degree credit in combination with any one of the other three.

***91 Principles of Statistical Methods (3)**

Staff

Lecture (3 hours), laboratory (1 hour). Variables and attributes, averages and dispersion, frequency distributions and their characteristics, regression and correlation, statistical decision processes. Laboratory fee, \$9. (Fall—day; spring—evening; summer 1969)

97 Introduction to Computer Programming (3)

Thomas and Staff

Lecture (2 hours), laboratory (2 hours). Computer and programming concepts. High-level language programs written by students will be run on the University computer. Laboratory fee, \$20. (Fall and spring—day; summer 1969)

SECOND GROUP**†104 Statistics in the Behavioral Sciences and Education I (3)**

Staff

Lecture (2 hours), laboratory (2 hours). Introductory study of statistical techniques for research problems in behavioral sciences and education. Laboratory fee, \$9. (Fall—evening; summer 1969)

105 Statistics in the Behavioral Sciences and Education II (3)

Kirsch

Lecture (2 hours), laboratory (2 hours). Advanced study of statistical techniques for research problems. Analysis of variance, correlation techniques, chi-square applications, sampling theory. Prerequisite: Statistics 53 or 104. Laboratory fee, \$9. (Fall—day; spring—evening)

106 Factor Analysis (3)

Concepts of factor analysis and their utility in various phases of research and related topics. Prerequisite: Statistics 105 or equivalent. Laboratory fee, \$9. (Fall—as arranged)

107 Statistics for Engineers (3)

Staff

Probability models, discrete and continuous distributions, sampling, hypothesis testing and estimation, engineering applications. Prerequisite: differential and integral calculus. (Fall—evening; summer 1969)

109-10 Quality Control and Reliability Techniques (3-3)

Statistical methods and probability models for quality control and reliability applications. Prerequisite: Statistics 91 or 107. (Not offered 1969-70)

111 Business and Economic Statistics I (3)

Johnson

Statistical processes as tools in decision making in areas of economics and business. Prerequisite: Statistics 51 or permission of instructor. (Fall—day and evening)

112 Business and Economic Statistics II (3)

Johnson

Case work to illustrate quantitative procedures for solution of economic and business problems. Prerequisite: Statistics 111 or equivalent. (Spring—day and evening)

* Statistics 51, 53, and 91 are related in their subject matter, and credit hours for only one of the three may be applied toward a degree. Statistics 52 lies outside of this group, and may be taken for degree credit in combination with any one of the other three.

† May not be taken for credit by students who have received credit for Statistics 51, 53, or 91.

- 113 Computer Programming (3)** Thomas and Staff
Lecture (2 hours), laboratory (2 hours). Computer concepts beyond the introductory level; an introduction to assembly language and advanced high-level language programming. Prerequisite: Statistics 97. Laboratory fee, \$20. (Fall—as arranged)
- 114 Introduction to Computer Operating Systems (3)** Thomas and Staff
Design and implementation of operating systems, program editing and loading, supervisory routines, input-output control, multi-programming, scheduling systems, future trends. Prerequisite: Statistics 113. Laboratory fee, \$20. (Spring—as arranged)
- 115 Programming Languages (3)** Thomas and Staff
Concepts of programming languages, compiler techniques, nonnumeric programming. Prerequisite: Statistics 113 or permission of instructor. Laboratory fee, \$20. (Fall—as arranged)
- 117 Analysis of Variance (3)** Staff
Lecture (2 hours), laboratory (2 hours). Introduction to the design of experiments and analysis of variance; random block, factorial, Latin square and Graeco-Latin square designs; analysis of covariance. Prerequisite: Statistics 118. Laboratory fee, \$9. (Fall—day; spring—evening)
- 118 Regression Analysis (3)** Staff
Lecture (2 hours), laboratory (2 hours). Regression and correlation theory; simple, partial, and multiple. Prerequisite: 3 semester hours selected from Statistics 51, 53, 91, 104, 107. Laboratory fee, \$9. (Fall—evening; spring—day; summer 1969)
- 119 Bases of Statistical Decision Making (arr.)** Staff
For students in the Navy Graduate Financial Management Program only. Introduction to techniques of decision making, with emphasis on applications rather than theory. Includes: binomial distribution, normal distribution, Type I and II errors, estimation, research methodology, and problems of inference. (Summer 1969)
- 121 Design of Experiments for Behavioral Sciences and Education (3)** Kirsch
Applications of advanced experimental design to research problems in behavioral sciences and education. Prerequisite: Statistics 105 or 117 and permission of instructor. (Spring—evening)
- 122 Forecasting Principles and Techniques (3)** Johnson
Survey and appraisal of current economic forecasting techniques and indicators of business conditions. Preparation of an actual forecast. Prerequisite: Statistics 51 or equivalent. (Fall—day)
- *123 Introduction to Econometrics (3)** Johnson
Model construction and quantification of economic theory; relevant statistical processes and role of probability. Prerequisite: elementary course in economics and statistics. (Fall or spring—as arranged)

* An interdepartmental course offered by the departments of Statistics and Economics.

- 131 Contingency Table Techniques (3)** Staff
Analysis of categorical data. Tests of independence, homogeneity, and interaction in simple and complex contingency tables. Tests of goodness of fit and of Markovity. Prerequisite: Statistics 105 or 118, or permission of instructor. (Summer 1969)
- 155 Introduction to Probability (3)** Staff
Probability distributions, Bayes' theorem and postulate, Bernoulli's theorem and its experimental verification, mathematical expectation, laws of large numbers. Prerequisite: one entrance unit in algebra. (Spring—as arranged; summer 1969)
- 157-58 Introduction to Mathematical Statistics (3-3)** Staff
Distribution theory, sampling theory, estimation, hypothesis testing, regression analysis, experimental design. Prerequisite: differential and integral calculus. (Academic year—day and evening)
- 161-62 Information Theory (3-3)** Kullback
Elementary development of information theory and applications to communication, coding, psychology, linguistics, etc. Prerequisite: 3 semester hours selected from Statistics 107, 155, 157, 189. (Academic year—as arranged)
- 165-66 Multivariate Techniques (3-3)** Staff
Application of multivariate statistical techniques to multidimensional research data from the behavioral, social, biological, medical, and physical sciences. Prerequisite: Statistics 117, 118, 157-58; Mathematics 124. (Academic year—as arranged)
- 183 Intermediate Statistical Laboratory (3)** Staff
Applications to advanced experimental design and other topics. Prerequisite: Statistics 121 or permission of instructor. (As arranged)
- 187 Theory of Sampling (3)** Staff
Problems of sampling and sample design. Prerequisite: Statistics 91 or equivalent. (Fall—as arranged)
- 188 Nonparametric Statistical Inference (3)** Lilliefors
Statistical inference when the form of underlying distribution is unspecified. Prerequisite: Statistics 91 or equivalent. (Spring—as arranged)
- 189-90 Mathematical Probability and Applications (3-3)** Staff
Combinatorial analysis, conditional probability, stochastic independence, probability distributions, random variables, laws of large numbers. Prerequisite: differential and integral calculus. (Academic year—day and evening)
- 195 Reading and Research in Statistics (arr.)** Staff
May be repeated once for credit. (Fall and spring—as arranged)
- 197 Digital Computer Programming with Applications (3)** Thomas
Lecture (2 hours), laboratory (2 hours). Use of digital computer in statistical and other computational work. Writing, debugging, and running programs on the digital computer in the University Computer Center. Prerequisite: Statistics 117 and 118; or Mathematics 24 or 32; or permission of instructor. Laboratory fee, \$20. (Spring—as arranged)

THIRD GROUP

201-2 Mathematical Statistics (3-3)

Ireland

Distribution theory, sampling theory, estimation, sufficient statistics, hypothesis testing, analysis of variance, multivariate normal distribution. Prerequisite: advanced calculus. (Academic year—evening)

207-8 Operations Analysis (3-3)

Wolman

Basic concepts and techniques. Introduction to simulation, linear programming, game theory, queueing theory, inventory theory, and other topics. Admission by permission of instructor. (Academic year—as arranged)

217-18 Experimental Design (3-3)

Ireland

Advanced theory and application of general linear hypothesis to experimental designs. Prerequisite: Statistics 157-58 or 201-2; and Mathematics 124. (Academic year—evening)

231 Contingency Table Analysis (3)

Staff

A study of the theoretical bases underlying the analysis of categorical data. Prerequisite: Statistics 201-2 or 257-58. (Summer 1969)

257-58 Distribution Theory (3-3)

Staff

Random variables, distribution functions, moments, sequences of random variables, characteristic functions, special distributions, sampling theory, asymptotic distributions. Prerequisite: Statistics 157-58 or 201-2; and Mathematics 124, 139, 140, 157, 250. (Academic year—evening)

259-60 Advanced Mathematical Probability (3-3)

Staff

Measure theory, probability spaces, random variables, probability distributions, sequences of random variables, conditioning, martingales. Prerequisite: Statistics 189-90 and Mathematics 250. (Academic year—as arranged)

263-64 Topics in Statistical Inference (3-3)

Staff

Estimation, testing of statistical hypotheses, tests of significance, likelihood ratio, likelihood—odds and odds ratio, Bayesian inference and the use of prior knowledge, decision and information theory. Prerequisite: Statistics 257-58; or Statistics 201-2 and Mathematics 124. (Academic year—evening)

265-66 Multivariate Analysis (3-3)

Staff

Tests of significance, homogeneity, independence, canonical and vector correlations, multivariate normal distribution, generalized Student's ratio, multivariate linear hypothesis, and analysis of variance. Prerequisite: Statistics 257-58; or Statistics 201-2 and Mathematics 124. (Academic year—as arranged)

267-68 Characteristic Functions (3-3)

Staff

Fourier integrals, distribution functions, inversion formulas, limit theorems, applications to the distribution problem of statistics. Prerequisite: Statistics 189-90; 201-2 or 257-58; and Mathematics 157. (Not offered 1969-70)

269-70 Statistical Decision Theory (3-3)

Staff

Wald's theory of decision functions. Sequential analysis. Multi-decision problems. Existence theorems, complete class theorems, and other general

decision theoretic results. Prerequisite: Statistics 189-90; and 201-2 or 257-58. (Academic year—as arranged)

271-72 Statistical Information Theory (3-3) Kullback

Basic concepts, definitions, and formulas of information theory; their significance and general properties; inequalities of information theory and sufficiency; applications to statistical problems of discrimination and hypothesis testing. Prerequisite: Statistics 201-2 or 257-58; and 259-60. (Not offered 1969-70)

273-74 Markov Processes (3-3) Staff

Fundamental notions of Markov chains and processes, generating functions, recurrence, limit theorems, random walks, Poisson processes, birth and death processes, applications. Prerequisite: Statistics 189-90; and 201-2 or 257-58. (Academic year—as arranged)

***275 Econometrics I: Introduction (3)** Peskin, Heien

Survey of applications and introduction to statistical methods for estimating economic relationships for the economist with some mathematical facility. Prerequisite: one year of elementary statistics and Economics 203-4 and 205, or equivalent as approved by instructor. (Fall—evening)

***276 Econometrics II: Theory and Method (3)** Hoenack

Continuation of Statistics 275; emphasis on errors in variables, confluence, nonspherical disturbances, identification, and multi-equation estimation. Prerequisite: Statistics 275. Recommended: a course in matrix theory. (Spring—evening)

***277 Econometrics III: Special Topics in Econometrics (3)** Hoenack

Continuation of Statistics 276. Special topics on a single-equation and multi-equation estimation. Prerequisite: Statistics 276 or equivalent. (Fall—evening)

281-82 Time Series Analysis (3-3) Staff

Stationary and nonstationary time series, auto- and cross-correlation, power spectral analysis, multivariate normal processes, mean square estimation and regression, statistical inference, applications. Prerequisite: Statistics 189-90; and 201-2 or 257-58. (Not offered 1969-70)

283 Advanced Statistical Laboratory (3) Staff

Application of the University computer to complex statistical problems on an individual study basis. Admission by permission of instructor. May be repeated once for credit. Laboratory fee, \$20. (Fall and spring—as arranged)

285-86 Seminar (3-3) Staff

Admission by permission of instructor. (First half and second half: fall and spring—as arranged)

295 Reading and Research (3) Staff

May be repeated once for credit. (Fall and spring—as arranged)

297 Seminar: Problems in Mathematical Statistics (3) Staff

(Not offered 1969-70)

* Interdepartmental course offered by departments of Statistics and Economics

298 Seminar: Combinatorial Probability (3)

(Summer 1969)

Staff

299-300 Thesis Research (3-3)

(Academic year—as arranged; summer 1969)

Staff

FOURTH GROUP

*378 Seminar: Topics in Econometrics (3)

Limited to graduate students, primarily for doctoral candidates; offered as demand requires. A research seminar covering current econometric literature. Prerequisite: Statistics 276. (As arranged)

Peskin

398 Advanced Reading and Research (arr.)

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged)

Staff

399 Dissertation Research (arr.)

Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Staff

Urban and Regional Planning

Adjunct Professor J.L. Intermaggio

Associate Professor D.C. McGrath, Jr. (Chairman)

Associate Professorial Lecturer P.H. Friedly

Assistant Professor Sherwin Greene

Master of Urban and Regional Planning.—See pages 136-39, 143-44.

Master of Arts in Government in the field of Urban and Regional Planning.—See pages 136-39, 144, 145.

Master of Public Administration in the field of Urban and Regional Planning.—See pages 136-39, 142-43.

Doctor of Public Administration.—See pages 147-49.

THIRD GROUP

201 Introduction to Urban Planning (3)

(Formerly Introductory Planning Problems)

Introduction to history, concepts, and activities of urban planning. Discussion of trends in urbanism and the influences of technical and social change. (Fall and spring—evening; summer 1969)

McGrath

203 Fundamentals of Urban Design (3)

Planning and design studio work to present planning methods and techniques, examine and apply principles of urban design and land use, analyze physiographic and economic factors affecting community growth and change, and prepare basic planning studies and proposals. (Fall—evening)

Greene

* Interdepartmental course offered by departments of Statistics and Economics.

204 Urban Development Planning (3)**Greene**

Planning and design studio to investigate social, environmental, and technological factors in planning for urban transportation and other systems. Synthesis and application of comprehensive planning principles to typical problems of systems growth and development affecting larger urban centers. Team and individual projects to integrate work of several disciplines. Prerequisite: Urban and Regional Planning 203 or permission of instructor. (Spring—evening; summer 1969)

205 Seminar: Urban Housing (3)**Intermaggio**

Consideration of housing problems growing out of increasing urban population. Social, economic, and design aspects of today's housing; foreign and domestic housing programs and policies. (Fall—evening)

207 Land Use Planning (3)**Nutting, McGrath**

Selected problems in urban development and housing, particular emphasis on programs under current federal and state legislation. (Same as Law 571 (2)*). (Fall and spring—evening)

208 Urban Transportation Planning (3)**Staff**

Review and analysis of relationships between land use and the movement of goods and people in urban areas. Consideration of transportation planning principles, policy problems, methods for analyzing demand and systems for urban travel, research and development, and roles of public agencies and private interests in planning and development of various modes. (Fall—evening)

210 Urban Development Economics (3)**Friedly**

Consideration of basic economic forces affecting urban growth and change; relationships among cities, metropolitan areas, and regions in the context of the national economy; socioeconomic aspects of urbanization; implications of urban land development policies; interaction of public and private economic functions; basic studies and methods of economic analysis applied in urban and regional development planning. (Spring—evening)

215 Advanced Planning Problems (3)**Intermaggio**

Examination of the anatomy of the metropolitan region, analysis of findings, formulation of proposals, and presentation of the material to faculty and cooperating groups. (Fall—evening)

218 Metropolitan and Regional Planning (3)**McGrath and Staff**

Planning and design studio projects undertaking areawide analyses of complex regions and applying advanced techniques to prepare comprehensive development policies and plans for projected growth. Collaborative projects requiring problem analysis, synthesis, and development of policies and proposals jointly by several graduate study disciplines. (Spring—evening)

299 Thesis Seminar (3)**Staff**

Examination of thesis standards, research philosophy, and methodology. (Fall and spring—as arranged)

* Students registering for Urban and Regional Planning 207 make special arrangements with instructor for supplementary assignments equivalent to one additional semester hour. Dr. Nutting is Professor of Law in the National Law Center.

300 Thesis Research (3)

(Fall and spring—as arranged)

Staff

FOURTH GROUP**398 Advanced Reading and Research (arr.)**

Limited to students preparing for the Doctor of Public Administration general examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Staff

399 Dissertation Research (arr.)

Limited to Doctor of Public Administration candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Staff

Zoology

See "Biological Sciences."



FACULTY AND STAFF OF INSTRUCTION

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

GRADUATE SCHOOL OF ARTS AND SCIENCES

SCHOOL OF EDUCATION

SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION

SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

EMERITI

- Antonio Alonso, *Professor Emeritus of Spanish*
M.A. 1922, Indiana University
- Ruth Harriet Atwell, *Professor Emeritus of Physical Education for Women*
Ph.B. 1918, Denison University; M.A. in Ed. 1933, George Washington University
- Gretchen Rogers Bolwell, *Professor Emeritus of German*
B.A. 1930, M.A. 1931, George Washington University; Ph.D. 1938, Johns Hopkins University
- Robert Whitney Bolwell, *Professor Emeritus of American Literature*
B.A. 1916, Case Western Reserve University; M.A. 1917, Ph.D. 1921, Columbia University;
Lit.D. 1957, George Washington University
- Paul William Bowman, *Professor Emeritus of Biology*
B.A. 1924, University of Pennsylvania; M.A. 1928, George Washington University; Ph.D. 1930,
University of Virginia
- Elbridge Colby, *Professor Emeritus of Journalism*
B.A. 1912, M.A. 1913, Ph.D. 1922, Columbia University
- Oswald Symister Colclough, *Professor Emeritus of Law; Dean of Faculties Emeritus; Emeritus Director of the Patent, Trademark, and Copyright Research Institute*
B.S. 1920, U.S. Naval Academy; LL.B. 1935, Sc.D. 1961, George Washington University;
LL.D. 1946, Muhlenberg College
- Norris Ingersoll Crandall, *Professor Emeritus of Art*
B.Arch. 1914, M.Arch. 1915, Cornell University
- Alan Thomas Deibert, *Professor Emeritus of Romance Languages*
B.A. 1918, Gettysburg College; M.A. 1922, Harvard University
- William Webster Diehl, *Professor Emeritus of Mycology*
B.A. 1914, Miami University; M.S. 1915, Iowa State University of Science and Technology;
Ph.D. 1912, Harvard University
- James Harold Fox, *Professor Emeritus of Education*
B.A. 1925, M.A. 1926, University of Western Ontario, Canada; Ed.M. 1936, Ed.D. 1937,
Harvard University

- Thomas Willard Holland, *Professor Emeritus of Labor Economics, in Residence*
B.A. 1923, University of Michigan; LL.B. 1934, Columbia University; Ph.D. 1939, University of Wisconsin
- Averett Howard, *Professor Emeritus of English Composition*
B.A. 1922, University of California, Berkeley; M.A. 1940, Cornell University
- Thelma Hunt, *Professor Emeritus of Psychology, in Residence*
B.A. 1924, M.A. 1925, Ph.D. 1927, M.D. 1935, George Washington University
- Arlin Rex Johnson, *Professor Emeritus of Business Administration*
B.S. 1924, Brigham Young University; M.A. 1931, Ph.D. 1935, George Washington University
- Everett Herschel Johnson, *Professor Emeritus of Statistics, in Residence*
B.A. 1926, DePauw University; M.A. 1929, Lehigh University; Ph.D. 1942, University of Michigan
- Francis Edgar Johnston, *Professor Emeritus of Mathematics*
B.A. 1921, George Washington University; M.A. 1923, Ph.D. 1926, University of Illinois
- Elmer Louis Kayser, *Professor Emeritus of European History; Dean Emeritus of the Division of University Students*
B.A. 1917, M.A. 1918, LL.D. 1948, George Washington University; Ph.D. 1932, Columbia University
- Frances Kirkpatrick, *Professor Emeritus of Home Economics*
B.S. 1919, University of Missouri; M.A. 1929, Columbia University
- Helen Bennett Lawrence, *Professor Emeritus of Physical Education for Women*
B.S. in P.E. 1934, M.A. 1938, George Washington University
- John Russell Mason, *Librarian Emeritus; Curator of Art Emeritus*
B.A. 1923, M.A. 1925, George Washington University; M.S. in L.S. 1933, Columbia University
- Florence Marie Mears, *Professor Emeritus of Mathematics*
B.A. 1917, Goucher College; M.A. 1924, Ph.D. 1927, Cornell University
- William Henry Myers, *Professor Emeritus of Physical Education, Health, and Recreation for Men*
B.A. 1931, Occidental College; M.A. in Ed. 1941, George Washington University
- Fred Everett Nessell, *Registrar Emeritus*
B.A. 1920, Hiram College
- Richard Norman Owens, *Professor Emeritus of Business Administration*
B.A., B.S. 1917, University of Missouri; M.A. 1922, Ph.D. 1928, University of Chicago; C.P.A. 1923, State of Illinois
- Myrna Pauline Sedgwick, *Administrative Secretary Emeritus*
B.A. 1911, Wellesley College
- Edward Henry Sehr, *Professor Emeritus of German*
B.A. 1911, Ph.D. 1915, Johns Hopkins University
- Ernest Sewall Shepard, *Professor Emeritus of English Literature*
B.A. 1925, M.A. 1927, George Washington University
- Harold Griffith Sutton, *Director of Admissions Emeritus*
B.A. 1918, Ohio State University; M.S. 1921, Columbia University
- James Henry Taylor, *Professor Emeritus of Mathematics*
B.S. 1916, University of Nebraska; M.A. 1920, Princeton University; Ph.D. 1924, University of Chicago
- Kathryn Mildred Towne, *Professor Emeritus of Home Economics*
B.S. 1923, Montana State University; M.A. 1930, Columbia University
- Frank Mark Weida, *Professor Emeritus of Statistics*
B.S. 1913, Kenyon College; Ph.D. 1923, University of Iowa
- Warren Reed West, *Professor Emeritus of Political Science*
B.A. 1918, George Washington University; Ph.D. 1922, Johns Hopkins University
- Lawson Edwin Yocum, *Professor Emeritus of Botany*
B.S. 1916, Pennsylvania State University; M.S. 1920, Ph.D. 1924, State College of Iowa
- Donnell Brooks Young, *Professor Emeritus of Zoology*
B.S. 1911, Amherst College; Ph.D. 1923, Columbia University

ACTIVE*

- Fred Abrams, Associate Professor of Spanish**
B.A. 1955, Queens College, New York; M.A. 1957, Ph.D. 1960, University of Iowa
- Eugene Abravanel, Assistant Professor of Psychology**
B.A. 1955, University of Michigan; M.A. 1960, Swarthmore College; Ph.D. 1965, University of California, Berkeley
- Leonard Ackerman, Associate Professorial Lecturer in Business Administration**
B.A. 1956, Rutgers, the State University; Ed.D. 1967, George Washington University
- Alice Anderson Adams, Assistant Clinical Professor of Psychology**
B.F.A. 1948, Ph.D. 1959, University of Oklahoma
- Caroline Lander Adams, Associate Professor of Botany**
B.A. 1925, Illinois College; M.S. 1928, University of Chicago; Ph.D. 1932, University of Wisconsin
- Elizabeth Byrne Adams, Assistant Professor of Business Administration**
B.S. 1953, Queens College, New York; M.A. in Ed. 1957, George Washington University
- Richard Henry Adamson, Associate Professorial Lecturer in Physiology**
B.A. 1957, Drake University; M.S. 1959, Ph.D. 1961, University of Iowa
- Martha Diaz De León Adem, Associate Professor of Spanish**
M.A. 1952, New York University; Doctora en Letras 1956, Universidad Nacional, Autónoma de México
- Lewis Francis Affronti, Associate Professor of Microbiology**
B.A. 1950, M.A. 1951, State University of New York at Buffalo; Ph.D. 1958, Duke University
- Robert Wayne Albers, Professorial Lecturer on Biochemistry of the Brain**
B.S. 1950, University of Nebraska; Ph.D. 1954, Washington University
- Ernest Narinder Albert, Assistant Professor of Anatomy**
B.S. 1959, High Point College; M.S. 1963, University of Pittsburgh; Ph.D. 1965, Georgetown University
- Frank Duane Allan, Professor of Anatomy**
B.S. 1947, M.S. 1949, University of Utah; Ph.D. 1954, Louisiana State University
- John Gage Allee, Jr., Professor of English Philology; Dean of the Division of University Students**
B.A. 1939, M.A. 1940, George Washington University; Ph.D. 1955, Johns Hopkins University
- George Richard Allen, Associate Professor of Management**
B.S. 1962, M.B.A. 1965, University of Pittsburgh; D.B.A. 1967, Arizona State University
- George Venable Allen, Ambassador in Residence**
B.A. 1924, LL.D. 1949, Duke University
- Don Trudeau Allensworth, Assistant Professor of Political Science**
B.A. 1956, Ohio Wesleyan University; M.B.A. 1957, Ohio State University; M.A. 1960, Ph.D. 1964, American University
- William Earl Amos, Professorial Lecturer in Education**
B.S. in Ed. 1949, Arkansas State Teachers College; M.A. 1950, University of Tulsa; Ed.M. 1959, Ed.D. 1960, University of Maryland
- W. French Anderson, Professorial Lecturer in Biochemistry**
B.A. 1958, M.D. 1963, Harvard University; M.A. 1960, Cambridge University, England
- Alice Erwin Andrews, Associate Professorial Lecturer in Geography and Regional Science**
B.A. 1949, University of Georgia; M.A. 1950, Northwestern University
- Avery Delano Andrews II, Assistant Professor of History**
B.A. 1950, Harvard University; LL.B. 1953, M.A. 1958, Ph.D. 1962, University of Pennsylvania
- Ronald Andrews, Assistant Professorial Lecturer in Physics**
B.S. 1962, Ph.D. 1966, Wayne State University

*The University Faculty is composed of the President of the University, the Vice President for Academic Affairs, the Director of Admissions, the Registrar, the Director of Libraries, the Treasurer, the Director of Health Services, the Administrator of the Hospital and Clinics, and the membership of the several colleges and school faculties.

- Grover LaMarr Angel, Professor of Education**
B.A. 1929, High Point College; M.A. in Ed. 1946, Ed.D. 1952, George Washington University
- John Lawrence Angel, Professorial Lecturer in Anatomy and Anthropology**
B.A. 1936, Ph.D. 1942, Harvard University
- Charlotte Miriam Anker, Assistant Professorial Lecturer in Sociology**
B.A. 1955, Temple University
- Daniel Appleman, Professorial Lecturer in Geology**
B.S. 1953, California Institute of Technology; M.A. 1954, Ph.D. 1956, Johns Hopkins University
- Sidney Armore, Associate Professorial Lecturer in Statistics**
B.A. 1937, Brooklyn College
- Philip Elwyn Arsenault, Associate Professorial Lecturer in Education**
B.A. 1935, M.S. in Ed. 1937, Clark University; Ph.D. 1958, Princeton University
- Joseph Aschheim, Professor of Economics**
B.A. 1951, University of California, Berkeley; M.A. 1953, Ph.D. 1954, Harvard University
- Daniel Millen Atwood, Instructor in English**
B.A. 1961, University of Wisconsin; M.A. 1967, George Washington University
- James Stephen Aven, Associate Research Professor of Education**
B.A. 1949, M.A. 1952, Ed.D. 1962, University of California, Los Angeles
- Joseph Bacławski, Professorial Lecturer in International Affairs**
B.A. 1947, M.A. 1948, Ph.D. 1951, University of Michigan
- Fred Richard Bahr, Associate Professorial Lecturer in Behavioral Sciences**
B.A. 1962, M.A. 1963, George Washington University
- John Martyn Bailey, Associate Professor of Biochemistry**
B.S. 1949, Ph.D. 1952, University of Wales
- Martha Ann Bair, Assistant Professor of Physical Education for Women**
B.S. in Ed. 1958, University of Arkansas; M.A. 1967, University of Maryland
- Robert Edward Baker, Professor of Education; Assistant Dean of the School of Education; Director, M.A.T. Program in Elementary Education**
B.S. in Ed. 1939, State University of New York at Buffalo; M.A. 1954, Catholic University of America; M.A. in Ed. 1956, Ed.D. 1962, George Washington University
- Carolyn Mary Baldwin, Instructor in Physical Education for Women**
- Samuel Harvard Barboo, Jr., Assistant Professorial Lecturer in Epidemiology and Environmental Health**
B.S. 1955, M.P.H. 1957, University of California, Berkeley; Dr.P.H. 1966, University of California, Los Angeles
- Ruth Lillian Aaronson Bari, Assistant Professor of Mathematics**
B.A. 1939, Brooklyn College; M.A. 1943, Ph.D. 1966, Johns Hopkins University
- Richard Adrian Barrett, Assistant Professor of Business Administration; Director, Navy Graduate Financial Management Program**
B.A. 1930, Amherst College; M.B.A. 1932, Harvard University
- Lloyd Bartholomew, Associate Professor of Health Care Administration**
B.A. 1936, Th.B. 1938, Th.M. 1941, University of Dubuque; M.A. 1954, Ph.D. 1959, University of Iowa
- Bette Lee Barton, Associate Professor of Chemistry**
B.A. 1958, Rutgers, the State University; M.A. 1959, Ph.D. 1963, Columbia University
- Harold Baskin, Studio Lecturer in Art (Advertising Design)**
- Edward Stanley Beach, Jr., Associate Professor of Education**
B.S. 1951, Ed.M. 1957, University of Maryland, Ed.D. 1968, George Washington University
- Katharine Pease Beardsley, Associate Clinical Professor of Psychology**
B.S. 1932, Beloit College; M.A. 1933, Smith College; Ph.D. 1949, Columbia University
- Richard Lee Beatty, Assistant Professorial Lecturer in Statistics**
B.S. 1950, M.S. 1958, University of Wyoming; M.S. 1952, University of Colorado; Ph.D. 1966, University of Toronto, Canada

- Norman Beckman, *Associate Professorial Lecturer in Public Administration*
B.A. 1949, Brooklyn College; M.A. 1952, Syracuse University; Ph.D. 1957, Columbia University
- David Booth Beers, *Assistant Professorial Lecturer in Classics*
B.A. 1957, Trinity College, Connecticut; M.A., LL.B. 1960, University of California, Berkeley
- Clifford Leonard Berg, *Professorial Lecturer in Public Administration*
B.A. 1942, University of Minnesota; M.P.A. 1951, Ph.D. 1955, Harvard University
- Otto Bergmann, *Professor of Physics*
Ph.D. 1949, University of Vienna, Austria
- Charles Gale Berns, *Professorial Lecturer in Business Administration*
B.A. 1931, Pennsylvania State University; M.A. 1932, Columbia University; LL.B. 1941, Fordham University
- Barry Peter Berube, *Assistant Professor of Physical Education for Men*
B.S. 1963, M.A. 1965, University of Maryland
- Gerrit Besselaar, *Clinical Instructor in Pharmacology*
M.D. 1959, University of Leiden, Netherlands
- Dorothy Marshall Betz, *Assistant Professor of French*
B.A. 1961, George Washington University; M.A. 1963, Ph.D. 1967, Cornell University
- Lee Sheward Bielski, *Associate Professor of Speech*
B.S. 1940, Ohio University; M.A. 1944, University of Michigan
- John Grover Birdsong, *Associate Professorial Lecturer in Business Administration*
B.Ae. 1961, Georgia Institute of Technology; M.B.A. 1965, Harvard University
- Charles Edward Bish, *Professorial Lecturer in Education*
B.A. 1925, Western Maryland College; M.A. 1937, Ed.D. 1942, George Washington University
- Guy Black, *Associate Professor of Business Economics*
B.S. 1941, Harvard University; M.A. 1943, Ph.D. 1951, University of Chicago
- Ethel Joan Blanchette, *Assistant Professorial Lecturer in Anatomy*
B.S. 1956, Queens College, New York; M.S. 1959, New York University; Ph.D. 1965, Columbia University
- Joseph Blum, *Professorial Lecturer in Mathematics*
B.S. 1940, City College, New York; M.A. 1948, Ph.D. 1958, George Washington University
- Joe Morris Blumberg, *Clinical Professor of Pathology*
B.S. 1930, M.D. 1933, Emory University
- Edgar Boling, Jr., *Lecturer in English*
B.A. 1953, M.A. 1955, Emory University
- Roland Richard Bonato, *Associate Research Professor of Psychology*
B.A. 1954, Case Western Reserve University; M.A. 1957, Ph.D. 1961, University of Connecticut
- Margaret Kemper Bonney, *Instructor in English*
B.A. 1936, Harvard University; Ed.M. 1963, Vassar College
- Daniel Borth, *Professorial Lecturer in Accounting*
B.S. 1927, University of Kansas; M.S. 1928, Ph.D. 1932, University of Illinois; C.P.A. 1938, State of Louisiana
- John Gordon Boswell, *Associate Professor of Education*
B.A. in Ed. 1953, M.A. in Ed. 1956, Ed.D. 1963, George Washington University
- Perry Botwin, *Professor of Special Education*
B.S. 1942, Rutgers, the State University; M.A. 1947, New York University; Ed.D. 1957, Columbia University
- Lloyd Spencer Bowling, Sr., *Associate Professor of Speech and Hearing*
B.A. 1954, M.A. 1957, Ed.D. 1964, University of Maryland
- Thomas Elliot Bowman, *Adjunct Lecturer in Biological Sciences*
B.S. 1941, Harvard University; M.A. 1948, University of California, Berkeley; Ph.D. 1954, University of California, Los Angeles

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- Jerome Bracken, *Professorial Lecturer in Business Administration***
B.S. 1956, Carnegie-Mellon University; M.E.A. 1959, George Washington University; D.B.A. 1963, Harvard University
- Roscoe Brady, Jr., *Professorial Lecturer on Biochemistry of the Brain***
M.D. 1947, Harvard University
- Henry Brehm, *Associate Professorial Lecturer in Sociology***
B.A. 1953, M.A. 1960, New York University
- Gloria Godbey Brennan, *Assistant Clinical Professor of Pathology***
B.A. 1949, M.D. 1952, George Washington University
- Marcella Brenner, *Associate Professor of Education; Associate Director, M.A.T. Program in Elementary Education***
B.S. in Ed. 1934, Johns Hopkins University; M.A. 1949, American University; Ed.D. 1962, George Washington University
- Alexander Breslow, *Associate Professor of Pathology***
B.S. 1948, M.S., M.D. 1953, University of Chicago
- John Withrow Brewer, *Professor of International Law***
B.A. 1926, M.A. 1930, Ph.D. 1932, Princeton University
- Harold Frederick Bright, *Professor of Statistics; Vice President for Academic Affairs***
B.A. 1937, Lake Forest College; M.S. 1944, University of Rochester; Ph.D. 1952, University of Texas
- A.D. Britt, *Associate Professor of Chemistry***
B.S. 1957, West Texas State University; M.A. 1961, Ph.D. 1963, Washington University
- John Caruthers Broderick, *Adjunct Professor of English***
B.A. 1948, Southwestern at Memphis; M.A. 1949, Ph.D. 1953, University of North Carolina at Chapel Hill
- Bernard Beryl Brodie, *Professorial Lecturer in Pharmacology***
B.S. 1931, McGill University, Canada; Ph.D. 1935, New York University
- Diana Paul Bronte, *Instructor in French***
B.A. 1960, Hendrix College
- Elizabeth Broomhead, *Associate Clinical Professor of Psychology***
B.A. 1930, Mount Holyoke College; M.A. 1932, Columbia University
- David Springer Brown, *Professor of Management***
B.A. 1936, University of Maine; Ph.D. 1955, Syracuse University
- Laurence Ray Brown, *Assistant Professorial Lecturer in Business Administration***
B.S. in Engr. 1949, D.B.A. 1968, George Washington University; LL.B. 1951, Rutgers, the State University; M.S. in E.E. 1958, University of Pennsylvania
- Raymond Nathan Brown, *Assistant Clinical Professor of Anatomy***
M.D. 1943, George Washington University
- Robert Ben Brown, *Associate Professorial Lecturer in Accounting***
B.S. 1932, Oregon State University
- Robert Guy Brown, *Professor of Sociology***
B.A. 1949, University of Rhode Island; M.A. 1951, Ph.D. 1960, University of North Carolina at Chapel Hill
- John Robert Buchheit, *Associate Professorial Lecturer in Biological Sciences***
B.S. 1929, Hamline University; M.S. 1932, University of Illinois
- James Leonard Buckler, *Professorial Lecturer in Accounting***
B.A. in Govt. 1944, M.A. in Govt. 1950, George Washington University
- Kenneth Eugene Bumgarner, *Assistant Professor of Physical Education for Men***
B.S. in Health Ed. 1963, Pennsylvania State College, Lock Haven; M.A. in Ed. 1966, George Washington University
- Nancy Liddell Bunge, *Instructor in English***
B.A. 1964, Radcliffe College; M.A. 1966, University of Chicago

- James Franklin Burks, Associate Professor of French**
B.A. 1931, M.A. 1932, University of Cincinnati; Ph.D. 1937, Indiana University
- Arthur Edward Burns, Professor of Economics; Dean of the Graduate School of Arts and Sciences**
B.A. 1931, M.A. 1934, University of California, Berkeley; Ph.D. 1935, George Washington University
- William Wesley Burr, Jr., Professorial Lecturer in Biochemistry (Isotopes)**
B.A. 1947, University of Nebraska; M.S. 1948, Ph.D. 1951, University of Illinois; M.D. 1960, University of Texas
- Elizabeth Burtner, Professor of Physical Education for Women**
B.A. 1927, Hood College; M.A. 1935, Columbia University
- Martin Alexander Buzas, Associate Professorial Lecturer in Geology**
B.A. 1938, University of Connecticut; M.S. 1960, Brown University, Ph.D. 1963, Yale University
- Elizabeth Caffin, Lecturer in English**
B.A. 1962, M.A. 1963, University of Canterbury, New Zealand
- Paul Calabrisi, Alumni Professor of Anatomy**
B.A. 1931, Catholic University of America; M.A. 1940, George Washington University; Ph.D. (Cantab.) 1955, Cambridge University, England
- Willard Edmund Caldwell, Professor of Psychology**
B.A. 1940, M.A. 1941, University of Florida; Ph.D. 1946, Cornell University
- Colin MacLennan Campbell, Associate Professorial Lecturer in Business Administration**
B.A. 1944, Norwich University; LL.B. 1950, University of Virginia; C.L.U. 1957, American College of Life Underwriters
- Edward Alan Carass, Associate Professor of Chemistry**
B.A. 1958, Dartmouth College; Ph.D. 1963, University of Rochester
- Judith Cochran Carlberg, Lecturer in English**
B.A. 1966, Hood College; M.A. 1968, George Washington University
- Gerald Vincent Carroll, Professor of Geology**
B.A. 1943, Lehigh University; Ph.D. 1952, Yale University
- Thomas Frank Carroll, Adjunct Professor of Economics**
B.A. 1942, Case Western Reserve University; M.S. 1947, Ph.D. 1950, Cornell University
- Wesley Thomas Carroll, Professor of Education**
B.S. 1933, Iowa State University of Science and Technology; M.A. 1940, Ph.D. 1952, University of Nebraska
- Marie Mullaney Cassidy, Associate Professor of Physiology**
B.S. (General) 1957, B.S. (Special) 1958, M.S. 1959, Ph.D. 1962, National University of Ireland
- Joan Patricia Caton, Assistant Professor of English**
B.A. 1961, Marquette University; M.A. 1963, Northwestern University
- Matthew John Cazan, Associate Professorial Lecturer in Political Science**
B.S. in F.S. 1940, M.S. in F.S. 1944, Georgetown University
- Fenner Albert Chace, Jr., Adjunct Lecturer in Biological Sciences**
B.A. 1930, M.A. 1931, Ph.D. 1934, Harvard University
- William Weymouth Chase, Professorial Lecturer in Education**
B.A. 1948, M.A. 1949, Colorado State College; Ed.D. 1956, Indiana University
- George Cheely, Assistant Professorial Lecturer in Journalism**
B.S. 1952, University of Maryland
- Stephen Reed Chitwood, Assistant Professor of Public Administration**
B.A. 1962, University of Colorado; M.S. 1965, Ph.D. 1966, University of Southern California
- John Bert Christensen, Associate Professor of Anatomy**
B.A. 1954, Brigham Young University; M.S. 1955, Ph.D. 1958, University of Oklahoma
- Yang-Ming Chu, Assistant Professor of Microbiology**
B.S. 1959, University of Washington; M.S. 1964, Ph.D. 1967, George Washington University

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- Lloyd Eugene Church, *Associate Professorial Lecturer in Anatomy*
B.A. 1942, West Virginia University; D.D.S. 1944, University of Maryland; M.S. 1951, Ph.D. 1959, George Washington University
- Charmaine Lisée Ciardi, *Instructor in Special Education*
B.A. in Ed. 1964, M.A. in Ed. 1965, George Washington University
- Ira Hubert Cisin, *Professor of Sociology*
B.S. 1939, New York University; M.A. 1951, Ph.D. 1957, American University
- Astere Evarist Claeysens, Jr., *Associate Professor of English*
B.A. 1948, University of Illinois; M.A. 1952, Columbia University
- Jay Wood Claiborne, *Assistant Professor of English*
B.A. 1962, Southern Methodist University; M.A. 1965, Ph.D. 1969, University of Texas
- Jeanette Gayle Clapp, *Assistant Professor of Physical Education for Women*
B.S. 1959, East Carolina University; M.S. 1961, Ohio University
- Harrison Clark, *Assistant Professorial Lecturer in English*
B.A. 1942, Cornell University; M.A. 1956, Catholic University of America
- John Wiley Clark, *Assistant Professorial Lecturer in Business Administration*
B.S. in E.E. 1953, M.S. 1957, Purdue University
- Ronald Grey Clark, *Assistant Professorial Lecturer in Anatomy*
B.A. 1960, Johns Hopkins University; M.S. 1963, Ph.D. 1966, George Washington University
- Carl William Clewlow, *Professorial Lecturer in Business Administration*
B.A. in Govt. 1949, M.A. in Govt. 1951, George Washington University
- Daniel Raymond Cloutier, *Professor of Public Administration*
B.A. 1949, Bates College; M.P.A. 1951, University of Michigan; Ph.D. 1961, University of Alabama
- Anthony George Coates, *Associate Professor of Geology*
B.S. 1959, Ph.D. 1963, University of London, England
- *James Harold Coberly, *Professor of American Literature*
B.A. 1933, M.A. 1938, Ph.D. 1949, George Washington University
- Mary Ann Bieter Coffland, *Associate Professor of Romance Languages*
B.A. 1952, College of St. Catherine; M.A. 1957, Ph.D. 1965, University of Minnesota
- Stanley Lee Cohen, *Lecturer in Psychology*
B.A. 1963, M.A. 1966, George Washington University
- Victor Hugo Cohn, Jr., *Associate Professor of Pharmacology*
B.S. 1952, Lehigh University; M.A. 1954, Harvard University; Ph.D. 1961, George Washington University
- Charles William Cole, *Professor of American Literature; Dean of the Summer Sessions*
B.A. 1930, M.A. 1931, Ph.D. 1939, George Washington University
- Mary Ellen Coleman, *Professor of Education; Director, Reading Center*
B.S. 1947, Madison College; M.A. in Ed. 1950, George Washington University
- Calva Kephart Collier, *Lecturer in Physical Education for Women*
B.S. in P.E. 1949, George Washington University
- Frederick Collier, *Lecturer in Geology*
B.S. 1958, Tufts University
- Leonard Cornelius Collins, *Professorial Lecturer in Business Administration*
B.A. 1943, Boston College; LL.B. 1946, Catholic University of America; LL.M. 1953, Georgetown University
- George Frederick Conner, *Assistant Professor of Business Administration*
B.S. 1929, U.S. Military Academy; M.B.A. 1938, Harvard University
- Catherine Marie Cook, *Instructor in English*
B.A. 1954, M.A. 1960, Loyola University, Illinois
- Charles Barrie Cook, *Assistant Clinical Professor of Pathology*
B.S. 1945, Hampden-Sydney College; M.D. 1948, George Washington University

* On sabbatical leave spring semester 1970.

- Howard Lee Coppenbarger, *Associate Professorial Lecturer in Journalism*
 Bertice Andrews Cornish, *Associate Professor of Special Education*
 B.S. 1954, M.A. 1955, Ed.D. 1962, Columbia University
- Donald Thomas Corrigan, *Studio Lecturer in Art (Sculpture and Drawing)*
 B.F.A. 1966, University of Illinois; M.F.A. 1968, Maryland Institute, College of Art
- Raymond Sheary Cottrell, Jr., *Associate Professor of Special Education*
 B.S. 1955, State University of New York at Albany; M.S. 1959, Ed.D. 1967, Syracuse University
- Thomas Francis Courtless, Jr., *Associate Professor of Law and Sociology*
 B.A. 1955, Pennsylvania State University; M.A. 1960, Ph.D. 1966, University of Maryland
- Richard Hammond Cowan, Jr., *Lecturer in Accounting*
 B.S. 1965, University of Pennsylvania; M.B.A. 1967, Stanford University; C.P.A. 1968, State of Oklahoma
- Milton Crane, *Professor of English Literature*
 B.A. 1937, M.A. 1938, Columbia University; M.A. 1941, Ph.D. 1942, Harvard University
- Roger Frank Cressey, *Adjunct Lecturer in Biological Sciences*
 B.A. 1956, M.A. 1958, Ph.D. 1965, Boston University
- William Henry Crocker, *Adjunct Professor of Anthropology*
 B.A. 1950, Yale University; M.A. 1953, Stanford University; Ph.D. 1962, University of Wisconsin
- Pedro Cuatrecasas, *Professorial Lecturer in Biochemistry (Enzymology)*
 B.A. 1958, M.D. 1962, Washington University
- Samuel Culbert, *Associate Professorial Lecturer in Education*
 B.S. 1961, Northwestern University; Ph.D. 1966, University of California, Los Angeles
- Richard Harold Dahl, *Assistant Professor of Physical Education for Men*
 B.S. 1965, University of Maryland; M.A. 1966, University of North Carolina at Chapel Hill
- Marjorie Catlin Daly, *Assistant Professorial Lecturer in Education*
 B.A. 1958, Wichita State University; M.Mus.Ed. 1947, Northwestern University
- Anita Mallinckrodt Dasbach, *Assistant Professor of International Affairs*
 B.J. 1951, University of Missouri; M.A. in Govt. 1963, Ph.D. 1968, George Washington University
- Roderic Hollett Davison, *Professor of European History*
 B.A. 1937, Princeton University; M.A. 1938, Ph.D. 1942, Harvard University
- Louis De Alessi, *Professor of Economics*
 B.A. 1954, M.A. 1955, Ph.D. 1961, University of California, Los Angeles
- Vincent James DeAngelis, *Professor of Physical Education for Men*
 B.S. in P.E. 1939, M.A. in Ed. 1948, George Washington University
- Evelyn Lohoefer DeBoeck, *Associate Professorial Lecturer in Physical Education for Women*
 B.S. 1942, University of North Carolina at Greensboro
- Rosalie Frances De Giovanni-Donnelly, *Assistant Professorial Lecturer in Microbiology*
 B.A. 1947, M.A. 1953, Brooklyn College; Ph.D. 1961, Columbia University
- Harold Charles Demood, *Associate Professor of Business Administration*
 B.A. 1956, University of Connecticut; M.B.A. 1960, Air Force Institute of Technology
- Frank Landt Dennis, *Associate Professorial Lecturer in Journalism*
 B.A. 1929, University of Oklahoma; LL.B. 1935, Harvard University
- Linda Grant DePauw, *Associate Professor of American History*
 B.A. 1961, Swarthmore College; Ph.D. 1964, Johns Hopkins University
- Alton Harold Desmond, *Professor of Zoology*
 B.S. 1949, Hartwick College; M.S. 1951, Ph.D. 1954, Brown University
- Harry Grubb Detwiler, *Professor of Education*
 B.S. 1936, Pennsylvania State College, West Chester; M.A. in Ed. 1952, Ed.D. 1961, George Washington University

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B.A.Sc. 1961, University of British Columbia; M.B.A. 1966, D.B.A. 1968, University of Southern California

Michael Morgan Dietch, Jr., *Assistant Professorial Lecturer in Business Administration*

M.B.A. 1962, Harvard University

Alice Reid Digilio, *Lecturer in English*

B.A. 1964, Salem College, North Carolina; M.A. 1966, Lehigh University; B.Phil. (Oxon.) 1968, Oxford University, England

Joseph Amedeo Di Paolo, *Associate Professorial Lecturer in Anatomy*

B.A. 1948, Wesleyan University; M.S. 1949, Case Western Reserve University; Ph.D. 1951, Northwestern University

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- Mohammad Fatemi, *Instructor in Physics*
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- Daniel Finucane, *Professorial Lecturer in Epidemiology and Environmental Health*
B.S. 1926, M.D. 1927, Georgetown University
- Glenna Cady Fitzgerald, *Instructor in Pharmacology*
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- Lester Walter Fix, *Assistant Clinical Professor of Pathology*
M.D. 1943, State University of New York at Buffalo

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 B.S. 1952, M.D. 1955, University of North Carolina at Chapel Hill
- Victor Karl Golla, *Assistant Professor of Anthropology*
 B.A. 1960, University of California, Berkeley
- Cecil Earnest Goode, *Professorial Lecturer in Public Administration*
 B.S., M.S. 1938, Purdue University
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B.A. 1946, M.A. 1948, M.D. 1952, Stanford University; Ph.D. (Cantab.) 1958, Cambridge University, England

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B.A. 1950, University of California, Los Angeles, M.A. 1958, Ph.D. 1962, University of Colorado

- John Stewart Howe, *Associate Clinical Professor of Pathology*
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- Anne Mildred Hoyle, *Assistant Professorial Lecturer in Education*
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- Kun-yen Huang, *Assistant Professor of Microbiology*
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- Rudolph Hugh, *Professor of Microbiology*
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- Robert Lee Humphrey, Jr., *Assistant Professor of Anthropology*
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B.S. in Mus. Ed. 1955, M. Ed. in Mus. Ed. 1962, University of Maryland
- Margaret Ives, *Professorial Lecturer in Psychology*
B.A. 1924, Vassar College; M.A. 1929, Ph.D. 1938, University of Michigan
- David Iwamoto, *Associate Professorial Lecturer in Education*
B.A. 1947, Walla Walla College; M.A. 1948, Columbia Union College; M.A. in Ed. 1952, Ed.D. 1960, George Washington University
- Michael John Jackson, *Assistant Professor of Physiology*
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- Elden Eugene Jacobson, *Professorial Lecturer in Sociology*
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- Gilbert Chester Jacobus, *Professorial Lecturer in Business and Public Administration*
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- John Anderson Javens, *Lecturer in English*
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- Herbert Jehle, *Professor of Physics*
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B.S. 1945, University of North Carolina at Greensboro; M.S. 1948, Pennsylvania State University

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Mus.B. 1964, Rollins College

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B.A. 1963, M.A. 1965, Indiana University

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B.A. 1947, Brooklyn College; Ph.D. 1955, Columbia University

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M.A. 1967, Johns Hopkins University

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M.B., Ch.B. 1959, University of Baghdad, Iraq; M.P.H. 1965, Johns Hopkins University; M.S. in Hygiene 1967, Harvard University

- Kenneth Casper Kates, *Professorial Lecturer in Zoology*
B.A. 1932, Bard College; M.A. 1934, Ph.D. 1937, Duke University
- Barbara Sylvia Katz, *Lecturer in Physical Education for Women*
B.S. 1952, Brooklyn College
- Irving Katz, *Associate Professor of Mathematics*
B.S. 1956, Brooklyn College; M.A. 1958, Ohio State University; Ph.D. 1964, University of Maryland
- Leonard William Katz, *Instructor in Health Care Administration*
B.A. 1960, M.B.A. 1961, Dartmouth College
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B.S. 1955, M.S. 1956, Ph.D. 1961, University of Michigan
- Robert Adolph Kaye, *Professorial Lecturer in Business Administration*
B.A. in Govt. 1948, M.A. in Govt. 1950, D.B.A. 1961, George Washington University
- John Whitefield Kendrick, *Professor of Economics*
B.A. 1937, M.A. 1939, University of North Carolina at Chapel Hill; Ph.D. 1955, George Washington University
- Richard Alec Kenney, *Professor of Physiology*
B.S. 1945, Ph.D. 1947, University of Birmingham, England
- Robert Wayne Kenny, *Associate Professor of History*
B.J. 1953, University of Texas; M.A. 1957, University of Minnesota; Ph.D. 1963, University of Chicago
- Stephen Gabriel Kent, *Assistant Professor of Pathology*
B.A. 1956, M.D. 1960, Case Western Reserve University
- Hewitt Kenyon, *Professor of Mathematics*
B.S. 1942, Ph.D. 1954, University of California, Berkeley
- Jackson Kelley Kern, *Adjunct Assistant Professor of Statistics*
B.A. 1938, Fairmont State College, M.B.A. 1954, Columbia University
- Norayr Krikor Khatcheressian, *Assistant Professor of Physics*
B.A. 1960, M.A. 1963, George Washington University; Ph.D. 1966, University of Virginia
- Porter Martin Kier, *Professorial Lecturer in Geology*
Ph.D. (Cantab.) 1954, Cambridge University, England
- David Kieserman, *Assistant Professor of Drama*
B.A. 1958, New Jersey State College, Montclair, M.A. 1964, University of Illinois
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M.D. 1947, Seoul National University, Korea; M.S. 1949, Ph.D. 1952, University of Illinois
- James Cecil King, *Professor of German*
B.A. 1949, M.A. 1950, Ph.D. 1954, George Washington University
- Virginia Randolph Kirkbride, *Associate Professor of Educational Psychology*
B.A. 1941, M.A. 1942, University of Nebraska, Ed.D. 1959, George Washington University
- Arthur David Kirsch, *Associate Professor of Statistics*
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- Morris Kirshbaum, *Studio Lecturer in Applied Music (Cello)*
Mus.B. 1942, Mus.M. 1943, Yale University
- Donald Chenoweth Kline, *Professor of Art*
B.Arch. 1927, George Washington University; M.F.A. 1951, Catholic University of America
- Philip Klubes, *Assistant Research Professor of Pharmacology*
B.S. 1956, Queens College, New York; M.S. 1959, Ph.D. 1962, University of Minnesota
- Jack Louis Knetsch, *Professor of Economics*
B.S. 1955, M.S. 1956, Michigan State University; M.P.A. 1959, Ph.D. 1963, Harvard University
- George Martin Koehl, *Professor of Physics; Associate Dean of Columbian College of Arts and Sciences*
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Dr.Jur. 1929, University of Frankfurt, Germany; S.J.D. 1931, Harvard University

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B.A., B.Dip. in Ed. 1928, George Washington University
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- Hugh Linus LeBlanc, Professor of Political Science; Director, Programs in Public Affairs**
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B.A., M.S. 1948, Ph.D. 1951, University of Illinois
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- Sar Levitan, Research Professor of Economics**
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- Bernard Isaac Levy, Professor of Psychology**
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- Bert Levy, Lecturer in Statistics**
B.S. 1952, D.C. Teachers College
- Joseph Benjamin Levy, Professor of Chemistry**
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B.S. 1942, Springfield College; B.D. 1946, Yale University; M.A. 1947, University of Nebraska; Ph.D. 1959, American University

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B.S. 1944, Trinity College, Connecticut; M.B.A. 1947, University of Pennsylvania

Thomas Phillip George Liverman, *Professor of Mathematics*

B.A. 1941, University of Montpellier, France; M.A. 1948, Ph.D. 1956, University of Pennsylvania

Arthur Hamilton Livermore, *Professorial Lecturer in Education*

B.A. 1940, Reed College; M.S. 1942, Ph.D. 1944, University of Rochester

William Grim Locke, *Lecturer in Business Administration*

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B.A. 1958, M.A. 1960, George Washington University

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B.S. 1958, University of Pennsylvania; M.S. 1959, Columbia University

Robert Evans Luse, *Studio Lecturer in Applied Music (Guitar)*

B.A. 1965, American University

- Evelyn Gabai Lynch, *Instructor in English*
B.A. 1958, M.A. 1966, University of Michigan
- *William Allan MacDonald, *Professor of Art and Archeology*
B.A. 1940, Oberlin College; M.A. 1942, Ph.D. 1943, Johns Hopkins University
- Bela Maday, *Professorial Lecturer in International Affairs*
Ph.D. 1937, Pazmany University, Hungary
- Eugene Ross Magruder, *Associate Professor of Business Administration*
B.B.A. 1950, M.B.A. 1951, University of Texas; Ph.D. 1959, Ohio State University
- Mary Diane Majerus, *Instructor in Speech*
B.A. 1963, M.A. 1965, University of Iowa
- William Everett Maloney, *Associate Professorial Lecturer in Geology*
B.S. 1950, M.S. 1951, George Washington University
- Harold George Mandel, *Professor of Pharmacology*
B.S. 1944, Ph.D. 1949, Yale University
- Garth Leroy Mangum, *Research Professor of Economics*
B.S. 1956, Brigham Young University; M.P.A. 1958, Ph.D. 1960, Harvard University
- Nicholas Emmanuel Manos, *Assistant Professorial Lecturer in Epidemiology and Environmental Health*
B.A. 1938, University of California, Berkeley; M.A. 1942, University of California, Davis
- Forrester Maphis, *Lecturer in English*
B.A. 1950, Dartmouth College; M.A. 1955, LL.B. 1957, Georgetown University
- Joseph Bernard Margolin, *Associate Professorial Lecturer in Psychology*
B.A. 1942, Brooklyn College; M.A. 1947, George Washington University; Ph.D. 1954, New York University
- Anthony Marinaccio, *Professorial Lecturer in Education*
M.A. 1939, Ohio State University; Ph.D. 1949, Yale University
- John Anthony Marlin, *Assistant Professorial Lecturer in Business Administration*
B.A. 1962, Harvard University; B.A., M.A. 1964, Oxford University, England; Ph.D. 1968, George Washington University
- William Henry Marlow, *Professorial Lecturer in Mathematics*
B.S. 1947, St. Ambrose College, M.S. 1948, Ph.D. 1951, University of Iowa
- William Laverne Marsh, *Associate Professor of Pathology*
B.S. 1942, Purdue University; M.D. 1946, State University of New York at Buffalo
- Vernon Edward Martens, *Associate Clinical Professor of Pathology*
B.S. 1935, M.D. 1937, St. Louis University
- David Hill Massie, *Lecturer in Geology*
- Anthony James Mastro, *Associate Professor of Accounting*
B.S. 1951, M.B.A. 1953, New York University; M.A. 1963, University of Notre Dame, C.P.A. 1955, State of New Jersey
- Mary Jean Matthews, *Professorial Lecturer in Pathology*
B.A. 1946, M.D. 1949, George Washington University
- John Patterson Mayberry, *Professorial Lecturer in Mathematics*
B.A. 1950, University of Toronto, Canada; M.A. 1954, Ph.D. 1955, Princeton University
- Paul Mazel, *Associate Professor of Pharmacology*
B.S. 1946, Medical College of Virginia; M.S. 1955, Trinity University; Ph.D. 1960, Vanderbilt University
- Guido Ettore Mazzeo, *Professor of Romance Languages*
B.A. 1936, City College, New York; M.A. 1938, Ph.D. 1961, Columbia University
- George Edward McCandlish, *Associate Professor of American Literature and Civilization*
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- John Francis McCarthy, Jr., *Associate Professor of Business Administration*
B.A. 1936, Duquesne University; M.L. 1955, University of Pittsburgh
- Muriel Hope McClanahan, *Associate Professor of English Composition*
B.A. 1935, Colorado College; M.A. 1937, Ph.D. 1940, University of Pittsburgh
- William Agnew McClelland, *Professorial Lecturer in Psychology*
B.A. 1941, Brown University; M.A. 1946, Ph.D. 1948, University of Minnesota
- Kenneth Frederick McClure, *Professorial Lecturer on Commercial Law*
B.S. 1931, M.S. 1932, Wichita State University; LL.B. 1941, University of Maryland
- William Edward McConville, *Associate Professorial Lecturer in Public Administration*
B.A. 1958, Michigan State University; M.A. 1963, George Washington University
- Shirley Dickinson McCune, *Assistant Professorial Lecturer in Education*
B.S. 1957, Colorado State College; M.S.W. 1960, University of Denver; D.S.W. 1966, Catholic University of America
- Carl Oscar McDaniels, *Associate Professor of Education*
B.A. 1951, Bridgewater College; Ed.M. 1957, Ed.D. 1964, University of Virginia
- James Kenneth McDonald, *Associate Professor of International Affairs*
B.A. 1954, Yale University; B.Litt. 1961, Oxford University, England
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- Edwin McGowin, *Studio Lecturer in Art*
B.S. 1961, University of Southern Mississippi; M.A. 1964, University of Alabama
- Dorn Charles McGrath, Jr., *Associate Professor of Urban Planning*
B.A. 1952, Dartmouth College; M.C.P. 1959, Harvard University
- Mary Williamson McHenry, *Assistant Professor of English Composition*
B.A. 1954, Mount Holyoke College; M.A. 1960, Columbia University
- Margaret McIntyre, *Associate Professor of Education*
B.S. in Ed. 1939, State University of New York at Buffalo; M.A. 1944, Northwestern University.
A.P.C. 1963, George Washington University
- Ruth Blumenfeld McKay, *Associate Professor of Pediatrics (Psychiatry) and Anthropology*
B.A. 1954, Brooklyn College; M.A. 1961, Ph.D. 1965, University of Pennsylvania
- Marian McNabb, *Studio Lecturer in Applied Music (Piano)*
Mus.B. 1930, University of Kansas; M.S. in Mus. 1949, Union Theological Seminary
- Robert Emit McNelis, *Assistant Professorial Lecturer in Education*
B.S. 1954, Pennsylvania State College, West Chester; M.A. in Ed. 1961, Ed.D. 1968, George Washington University
- James McPherson, *Instructor in Mathematics*
B.S. 1958, M.A. 1961, Pennsylvania State University
- William Gerald Melson, *Associate Professorial Lecturer in Geology*
B.A. 1961, Johns Hopkins University; M.A. 1963, Ph.D. 1964, Princeton University
- Malcolm Lee Meltzer, *Associate Professor of Psychology; Director, Graduate Training in Clinical Psychology*
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- Jesse Eugene Merida, *Lecturer in Geology*
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- Howard Maxwell Merriman, *Professor of American Diplomatic History*
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- Franz Henry Michael, *Professor of International Affairs and Far Eastern History; Associate Director, Institute for Sino-Soviet Studies*
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- Charles Robert Midkiff, Jr., *Lecturer in Chemistry*
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- *Paul John Mika, *Associate Professor of Geography*
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- Jack William Millar, *Vivian Gill Professor of Epidemiology and Environmental Health*
B.A. 1945, Stanford University; M.D. 1947, George Washington University; M.P.H. 1951, M.S. in Hygiene and Tropical Medicine 1952, Harvard University
- Charles Henry Miller, *Assistant Professorial Lecturer in Epidemiology and Environmental Health*
B.S., M.D. 1949, University of Nebraska; M.P.H. 1963, University of Pittsburgh
- Frank Nelson Miller, Jr., *Professor of Pathology*
B.S. 1943, M.D. 1948, George Washington University
- Mary Fetler Miller, *Assistant Professor of Russian*
B.A. 1943, Northwestern University; M.A. 1966, University of Michigan
- Charles Milton, *Research Professor of Geology*
B.A. 1923, Iowa State University of Science and Technology; Ph.D. 1929, Johns Hopkins University
- Fredrick Louis Minn, *Associate Professor of Chemistry*
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- Edward Joseph Mock, *Associate Professor of Business Finance*
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- John Judson Monroe, *Assistant Professorial Lecturer in English*
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- Margaret Wheeler Montzka, *Assistant Professor of Physics*
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- John Andrew Morgan, Jr., *Associate Professor of Political Science*
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- Glenn Ellis Morris, *Associate Professorial Lecturer in Health Care Administration*
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B.A. 1923, University of Evansville; M.A. 1928, University of Chicago
- Edith Elizabeth Mortensen, *Professor of Zoology*
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- Harry Robert Page, *Professor of Business Administration*
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B.S. 1963, Ph.D. 1967, George Washington University
- Kittie Fenley Parker, *Associate Professor of Botany*
B.A. 1930, M.A. 1932, University of California, Berkeley; Ph.D. 1946, University of Arizona
- William Axel Parker, *Associate Professorial Lecturer in Health Care Administration*
B.S. 1945, University of Illinois; M.P.H. 1950, University of California, Berkeley; M.B.A. 1962, George Washington University
- Dee Rich Parkinson, *Assistant Clinical Professor of Pathology*
M.D. 1943, George Washington University
- Robert Carleton Parlett, *Professor of Microbiology*
B.A. 1948, M.S. 1951, University of Arizona; Ph.D. 1956, M.D. 1958, Northwestern University
- Robert Parris, *Associate Professor of Music*
B.S. in Mus.Ed. 1945, M.S. in Mus.Ed. 1946, University of Pennsylvania; B.S. in Mus.Comp. 1948, Juilliard School of Music
- Hugh Jones Parry, *Research Professor of Sociology*
B.A. 1937, Yale University; M.S. 1939, Columbia University; Ph.D. 1949, University of Southern California
- David Leo Pawson, *Adjunct Lecturer in Biological Sciences*
B.S. 1960, M.S. 1961, Ph.D. 1964, Victoria University, New Zealand
- Thomas Martin Peery, *Professor of Pathology*
B.A. 1928, D.M.S. 1966, Newberry College; M.D. 1932, Medical College of South Carolina
- Richard Wyndon Perkins, *Assistant Professorial Lecturer in Accounting*
B.A. 1953, Brown University; LL.B. 1956, Yale University; M.B.A. 1963, George Washington University
- Jack Perimutter, *Studio Lecturer in Art (Printmaking)*
- Theodore Peter Perros, *Professor of Chemistry*
B.S. 1946, M.S. 1949, Ph.D. 1952, George Washington University
- Edith Marie Pertuso, *Lecturer in English*
B.A. 1952, University of Maryland; M.A. 1968, Catholic University of America
- Henry Peskin, *Assistant Professor of Economics*
B.A. 1959, Wesleyan University; Ph.D. 1965, Princeton University
- Wretha Lanore Petersen, *Assistant Professor of Special Education*
B.S. 1955, Ed.M. 1957, University of Maryland
- Vladimir Petrov, *Professor of International Affairs*
M.A. 1961, Ph.D. 1965, Yale University

* On sabbatical leave spring semester 1970.

- *Carl Herman Pfuntner, *Associate Professor of Philosophy*
B.A. 1949, M.A. 1953, George Washington University; Ph.D. 1967, Georgetown University
- Marianne Ruth Phelps, *Assistant Professorial Lecturer in Education; Associate Dean of Students*
B.A. 1961, University of Michigan; M.S. 1964, M.A. 1965, University of Wisconsin
- Ewing Lakin Phillips, *Professor of Psychology; Director, Psychological Clinic*
B.S. 1937, Central Missouri State College; M.A. 1940, University of Missouri; Ph.D. 1949, University of Minnesota
- George Otis Pierce, *Associate Clinical Professor of Epidemiology and Environmental Health*
B.S. 1923, Purdue University; M.S. 1940, University of Minnesota
- Jack Warren Pierce, *Adjunct Professor of Geology*
B.S. 1949, M.S. 1950, University of Illinois; Ph.D. 1964, University of Kansas
- Lois Irene Platt, *Associate Professor of Pathology (Cytology)*
B.A. 1931, Goucher College; M.D. 1946, University of Maryland
- †Lucian Brewster Platt, *Associate Professor of Geology*
B.S. 1953, M.S. 1957, Ph.D. 1960, Yale University
- Stuart Franklin Platt, *Assistant Professorial Lecturer in Accounting*
B.S. 1955, University of Rochester; M.B.A. 1956, University of Michigan
- Sidney Ploss, *Associate Research Professor of International Affairs*
B.A. 1953, Syracuse University; Ph.D. 1957, University of London, England
- Richard James Podolsky, *Associate Professorial Lecturer in Physiology*
B.S. 1946, Ph.D. 1952, University of Chicago
- Ross Pollock, *Associate Professorial Lecturer in Public Administration*
B.S. 1930, Lafayette College; M.A. 1932, George Washington University
- Nadine Nadeshda Popluiko-Natov, *Associate Professor of Russian*
M.A. 1939, Ph.D. 1941, Pedagogical Institute of Modern Languages, Soviet Union
- Cecelia Hopkins Porter, *Assistant Professorial Lecturer in Music*
B.A. 1960, Radcliffe College; M.A. 1963, Columbia University
- Ben Posner, *Professorial Lecturer in Public Administration*
B.S. 1936, University of Arizona; M.A. 1941, George Washington University; Ph.D. 1962, American University
- Leonard Beatrice Pouliot, *Associate Professorial Lecturer in Public Administration*
B.A. 1949, Mexico City College; M.A. in Govt. 1962, George Washington University
- Francisco Prats, *Associate Professor of Physics*
Licenciado en Ciencias Fisico 1946, University of Madrid, Spain; Ph.D. 1958, University of Maryland
- Paul Jay Price, *Assistant Professorial Lecturer in Microbiology*
B.S. 1959, University of Maryland; M.S. 1961, Ph.D. 1964, George Washington University
- Robert William Prouty, *Assistant Professor of Special Education*
B.S. 1960, State University of New York, College at Geneseo; M.S. 1961, Syracuse University
- Maurice Pierre Pujol, *Professorial Lecturer in Accounting*
B.B.A. 1949, LL.B. 1956, Loyola University, Louisiana
- Ralph Elliott Purcell, *Professor of Political Science*
B.A. 1940, Florida Southern College; M.A. 1941, Duke University; Ph.D. 1949, University of Wisconsin
- Lawrence Pyle, Jr., *Assistant Clinical Professor of Epidemiology and Environmental Health*
M.D. 1939, Duke University
- Marjorie Robinson Quandt, *Assistant Professorial Lecturer in Health Care Administration*
B.A. 1946, College of St. Scholastica; M.S. in P.A. 1967, George Washington University

* On sabbatical leave fall semester 1969-70.

† On sabbatical leave spring semester 1970.

- Jon Alrik Quitslund, Assistant Professor of English**
B.A. 1961, Reed College; Ph.D. 1967, Princeton University
- Sonya Quitslund, Assistant Professor of Religion**
B.A. 1958, Seattle University; M.A. 1964, Ph.D. 1967, Catholic University of America
- Herbert Rabin, Associate Professorial Lecturer in Physics**
B.S. 1950, University of Wisconsin; M.S. 1951, University of Illinois; Ph.D. 1959, University of Maryland
- Robert Wallace Rafuse, Jr., Assistant Professor of Economics**
B.A. 1958, State University of New York at Binghamton; Ph.D. 1964, Princeton University
- Samuel Edward Ramsay, Studio Lecturer in Applied Music (French Horn)**
- Bernard Ramundo, Professorial Lecturer in Law**
B.A. 1947, City College, New York, LL.B. 1949, M.A. 1957, Columbia University; Ph.D. 1966, American University
- Martha Norman Rashid, Professor of Education**
Ed.B. 1949, State University of New York, College at Geneseo; M.A. 1951, Ph.D. 1955, University of Iowa
- Jay Saunders Redding, Professor of American History and Civilization**
Ph.B. 1928, M.A. 1932, Litt.D. 1963, Brown University; L.H.D. 1963, Virginia State College; Litt.D. 1964, Hobart College
- Charles Bass Reed, Assistant Professor of Physical Education for Men**
B.S. in P.E. 1963, M.A. in Ed. 1965, George Washington University
- John Palmer Reesing, Jr., Professor of English Literature**
B.A. 1941, Baylor University; M.A. 1942, Tulane University of Louisiana; Ph.D. 1954, Harvard University
- John Francis Regan, Associate Professorial Lecturer in Business Administration**
B.S. 1939, Harvard University; M.B.A. 1962, D.B.A. 1968, George Washington University
- Joan Roddy Regnell, Assistant Professor of Speech**
B.A. 1954, M.A. 1960, George Washington University
- Harald Alfred Rehder, Adjunct Lecturer in Biological Sciences**
B.A. 1929, Bowdoin College; M.A. 1933, Harvard University; Ph.D. 1934, George Washington University
- Bernard Reich, Assistant Professor of Political Science**
B.A. 1961, City College, New York; M.A. 1963, Ph.D. 1964, University of Virginia
- Melvin Reich, Associate Professor of Microbiology**
B.S. 1953, City College, New York; M.S. 1957, Ph.D. 1960, Rutgers, the State University
- George Henry Reifstein, Clinical Professor of Pathology**
B.A. 1932, M.D. 1936, Syracuse University
- Suzanne Lee Reynolds, Assistant Professor of Anthropology**
B.A. 1948, Ohio State University; M.A. 1964, University of New Mexico
- William Martin Reynolds, Associate Professor of Speech**
B.A. 1950, Wichita State University; M.A. 1957, Ph.D. 1960, University of Florida
- Alice Haughton Rice, Lecturer in English**
B.A. 1953, Wellesley College; M.A. 1963, Temple University
- Charles Rice, Associate Professor of Psychology**
B.S. 1954, Iowa State University of Science and Technology; Ph.D. 1959, Case Western Reserve University
- William Edward Rice, Assistant Professorial Lecturer in Journalism**
B.A. 1960, University of Virginia; M.S. 1963, Columbia University
- Lois Compton Richards, Lecturer in Speech**
B.A. 1959, M.A. 1961, George Washington University
- Thomas Elsworth Richards, Lecturer in Accounting**
B.B.A. 1965, George Washington University
- Floyd Millard Riddick, Professorial Lecturer in Political Science**
B.A. 1932, Ph.D. 1935, Duke University; M.A. 1932, Vanderbilt University

Saul Herbert Riesenber, *Adjunct Professor of Anthropology*

B.A. 1932, University of California, Los Angeles; Ph.D. 1950, University of California, Berkeley

Thomas Francis Riley, *Assistant Professor of Business Administration, George Washington University Program (Tidewater Area Center), Fort Monroe, Virginia*

B.S. 1958, M.B.A. 1967, Xavier University; M.S. in Fin.Mgt. 1966, George Washington University

Olivia Burnett Rivers, *Lecturer in English*

B.A. 1941, Blue Mountain College; M.A. 1942, George Peabody College for Teachers

John Raymond Rizzo, *Associate Professor of Behavioral Sciences*

B.A. 1959, University of Colorado; M.A. 1961, Ph.D. 1964, Ohio State University

James Willis Robb, *Professor of Romance Languages*

B.A. 1939, Colgate University; M.A. 1950, Middlebury College; Ph.D. 1958, Catholic University of America

Lewis Robbins, *Associate Clinical Professor of Epidemiology and Environmental Health*

B.S. 1935, Indiana State University; M.D. 1935, Indiana University; M.P.H. 1938, Johns Hopkins University

Mary Louise Robbins, *Professor of Microbiology*

B.A. 1934, American University; M.A. 1940, Ph.D. 1944, George Washington University

Philip Robbins, *Assistant Professorial Lecturer in Journalism*

B.A. 1952, Washington and Lee University; M.S. 1955, Columbia University

Donald Robinson, *Associate Professorial Lecturer in Political Science*

B.A. 1958, M.A. 1959, Northwestern University; Ph.D. 1963, American University

Thomas Robert Robinson, *Lecturer in Economics*

B.A. 1965, George Washington University

Alan Myron Rochlin, *Associate Clinical Professor of Psychology*

B.S. 1950, Rutgers, the State University; Ph.D. 1954, Duke University

Mario Rodriguez, *Professor of Latin American History*

B.A. 1946, M.A. 1948, Ph.D. 1952, University of California, Berkeley

Senta Stephanie Rogers, *Lecturer in Chemistry*

B.A. 1945, Hunter College; M.S. 1948, Purdue University; Ph.D. 1967, George Washington University

Kenneth William Rollins, *Associate Professorial Lecturer in Education*

B.A. 1946, George Peabody College for Teachers; Ed.M. 1947, Ed.D. 1957, Harvard University

Daniel David Roman, *Professor of Management*

B.S., B.A. 1949, M.A. 1953, Ph.D. 1956, University of Southern California

James Rudolph Roman, Jr., *Assistant Professor of Business Administration*

B.S. 1958, Bucknell University; M.B.A. 1960, University of Maryland

Blake Smith Root, *Professor of Education; Assistant Dean of the School of Education*

B.S. 1927, Monmouth College, Illinois; M.A. 1931, University of Illinois; Ed.D. 1948, George Washington University

Clyde Forrest Roper, *Adjunct Lecturer in Biological Sciences*

B.S. 1959, Transylvania College; M.S. 1962, Ph.D. 1967, University of Miami

S. McKee Rosen, *Visiting Professor of Public Administration*

B.A. 1923, University of Minnesota; Ph.D. 1931, University of London, England

Fredrica Lehrman Rosenberg, *Instructor in English*

B.A. 1962, American University; M.A. 1965, University of Maryland; Ph.D. 1969, University of Virginia

Joseph Rosewater, *Adjunct Lecturer in Biological Sciences*

B.S. 1950, M.S. 1956, University of New Hampshire; Ph.D. 1960, Harvard University

David Alton Rowley, *Assistant Professor of Chemistry*

B.S. 1963, M.S. 1964, State University of New York at Albany

- William Berkley Rucker, Assistant Professor of Psychology**
B.S. 1961, Ph.D. 1967, University of Chicago
- Charles Richard Russell, Assistant Professorial Lecturer in Business Administration**
B.S. 1956, U.S. Military Academy; M.A. in Acct., M.B.A. 1964, University of Arizona
- Constance Adelaide Russell, Studio Lecturer in Applied Music (Piano)**
- Alexander Russo, Studio Lecturer in Art (Painting)**
B.F.A. 1958, Columbia University
- William Rutiser, Lecturer in Statistics**
B.S. (Machine Computers) 1967, George Washington University
- Robert Clinton Rutledge, Associate Professor of English; Assistant Dean of Columbian College of Arts and Sciences**
B.A. 1940, University of Virginia; M.A. 1957, Ph.D. 1966, George Washington University
- Thomas Michael Ryan, Lecturer in Business Administration (Data Processing)**
B.B.A. 1965, Idaho State University
- William Jardine Ryan, Assistant Professorial Lecturer in Business Administration**
B.S. 1952, U.S. Naval Academy; M.B.A. 1966, George Washington University
- Thomas Saaty, Professorial Lecturer in Mathematics**
B.A. 1948, Columbia Union College; M.S. 1949, Catholic University of America; M.A. 1950, Ph.D. 1953, Yale University
- Margery Mauser Sabin, Assistant Professorial Lecturer in English**
B.A. 1960, Radcliffe College; M.A. 1961, Ph.D. 1966, Harvard University
- Howard Morley Sachar, Professor of History**
B.A. 1947, Swarthmore College; M.A. 1950, Ph.D. 1953, Harvard University
- Carol Ruth St. Cyr, Professor of Education**
B.S. 1946, Willamette State College; M.A. 1949, Trinity College, Connecticut; Ph.D. 1955, University of Michigan
- Victoria Kochurova Sandor, Assistant Professorial Lecturer in Russian**
B.A. 1954, Moscow Institute of Foreign Languages, Soviet Union; M.A. 1962, Georgetown University
- Pastora Esperanza San Juan, Instructor in English**
B.A. 1962, St. Bernard College; M.A. 1966, George Washington University
- Burton Sapin, Professor of International Affairs; Dean of the School of Public and International Affairs**
B.A. 1945, M.A. 1947, Columbia University; Ph.D. 1953, Princeton University
- Clyde Bailey Sargent, Professor of International Affairs; Director, George Washington University Center, Naval War College, Newport, R.I.**
B.A. 1930, Denison University; M.A. 1932, Trinity College, Connecticut; M.A. 1946, College of Chinese Studies, Peiping, China; Ph.D. 1946, Columbia University
- Robert Sauer, Clinical Professor of Pathology (Comparative Pathology)**
D.V.M. 1952, University of Pennsylvania
- Arnold Schaefer, Professorial Lecturer in Biochemistry**
B.S. 1939, South Dakota State University; M.S. 1941, Ph.D. 1947, University of Wisconsin
- Louis Charles Schaefer, Assistant Professor of English**
B.A. 1952, M.A. 1955, University of Chicago
- Stefan Otto Schiff, Associate Professor of Zoology**
B.S. 1952, Roanoke College; Ph.D. 1964, University of Tennessee
- Richard Harold Schlagel, Professor of Philosophy**
B.S. 1949, Springfield College; M.A. 1952, Ph.D. 1955, Boston University
- William Edward Schmidt, Professor of Chemistry**
B.S. 1943, M.S. 1950, George Washington University; M.A., Ph.D. 1953, Princeton University

* On sabbatical leave spring semester 1970.
† On sabbatical leave 1969-70.

- Berthold Schmutzhart, *Studio Lecturer in Art (Drawing)***
- Laura Mues Schrenk, *Assistant Professorial Lecturer in Philosophy***
Ph.D. 1963, University of Tübingen, Germany
- Maurice Herbert Schwartz, *Professorial Lecturer in Business Administration***
B.A. 1941, University of Illinois
- Milton Allan Schwartz, *Associate Professorial Lecturer in Statistics***
B.S. 1938, City College, New York
- Abraham Schwebel, *Associate Professorial Lecturer in Chemistry***
B.S. 1935, M.S. 1938, Brooklyn College; Ph.D. 1958, University of Maryland
- Lois Katherine Green Schwoerer, *Associate Professor of History***
B.A. 1949, Smith College; M.A. 1952, Ph.D. 1956, Bryn Mawr College
- Mona Scott, *Assistant Professorial Lecturer in Sociology***
B.A. 1960, M.A. 1961, University of the Pacific
- William Randolph Scott, *Lecturer in Physical Education for Men***
B.A. 1957, Marshall University
- Norman Orville Scribner, Jr., *Assistant Professorial Lecturer in Music***
Mus.B. 1961, Peabody Institute of the City of Baltimore
- Edward William Seaman, *Assistant Professorial Lecturer in Religion***
B.A. 1949, Cornell University; B.H.L. 1951, M.H.L., Rabbi 1954, Hebrew Union College
- Robert Curtis Sedwick, *Associate Professor of Business Administration; Director, George Washington University Program (Tidewater Area Center), Fort Monroe, Virginia***
B.S.E. 1949, U.S. Coast Guard Academy; M.E.A. 1960, D.B.A. 1964, George Washington University
- Lothar George Seeger, *Associate Professor of German***
B.A. 1954, Susquehanna University; B.D. 1957, Lutheran Theological Seminary, Philadelphia; M.A. 1962, Ph.D. 1966, University of Pennsylvania
- Aaron Bear Seidman, *Associate Professorial Lecturer in Hebrew***
B.A. 1941, Rabbi 1946, Yeshiva University; M.A. 1944, New York University
- Arthur Settel, *Assistant Professorial Lecturer in Journalism***
B.Lit. 1932, Columbia University
- *Robert Poindexter Sharkey, *Professor of Economic History***
B.A. 1948, Princeton University; Ph.D. 1958, Johns Hopkins University
- Thomas Elliott Shaughnessy, *Associate Professor of Business and Public Administration, George Washington University Program (Tidewater Area Center), Fort Monroe, Virginia***
B.S. 1933, Massachusetts Institute of Technology; M.A. in Ed. 1948, George Washington University; Ed.D. 1957, Johns Hopkins University
- Stanley Newton Sherman, *Assistant Professor of Business Administration***
B.A. 1952, M.B.A. 1960, University of Maryland
- Sidney Shifrin, *Professorial Lecturer in Biochemistry***
B.S. 1952, University of Maryland; Ph.D. 1957, Northwestern University
- Chung-wen Shih, *Associate Professor of Chinese***
B.A. 1945, St. John's University, China; M.A. 1949, Ph.D. 1955, Duke University
- Walter Allen Shropshire, Jr., *Associate Professorial Lecturer in Botany***
B.S. 1954, M.S. 1956, Ph.D. 1958, George Washington University
- Robert Hermann Shumway, *Associate Professor of Statistics***
B.A. 1958, Carleton College; M.S. 1960, Iowa State University of Science and Technology; Ph.D. 1965, George Washington University
- Frederic Richard Siegel, *Professor of Geochemistry***
B.A. 1954, Harvard University; M.S. 1958, Ph.D. 1961, University of Kansas

* On sabbatical leave fall semester 1969-70.

- Robert Sumner Sigafos, *Associate Professorial Lecturer in Botany*
B.S. 1942, M.S. 1943, Ohio State University; M.A. 1949, Ph.D. 1951, Harvard University
- David Elliot Silber, *Associate Professor of Psychology*
B.A. 1958, Wayne State University; M.A. 1960, Ohio University; Ph.D. 1965, University of Michigan
- Philip Leonard Simon, *Lecturer in Biological Sciences*
B.S. 1968, George Washington University
- Daniel Sinick, *Professor of Education*
B.A. 1936, City College, New York; M.A. 1937, State University of New York at Albany; Ph.D. 1955, New York University
- Abbie Oliver Smith, *Assistant Professorial Lecturer in Education*
B.S. in P.E. 1953, M.A. in Ed. 1958, George Washington University
- Benjamin Williams Smith, *Professor of Biochemistry*
B.S. 1940, Virginia Polytechnic Institute; M.S. 1947, Ph.D. 1951, George Washington University
- James Cecil Smith, Jr., *Special Lecturer in Biochemistry*
B.S. 1956, M.S. 1959, Ph.D. 1964, University of Maryland
- John Chandler Smith, *Professor of Pathology*
B.S. 1941, M.D. 1944, University of Oregon
- Lowell Cyrus Smith, *Assistant Professor of Business and Public Administration*
B.S. in B.A. 1953, Kent State University; M.B.A. 1963, George Washington University
- Lyman Bradford Smith, *Professorial Lecturer in Botany*
B.A. 1925, M.A. 1928, Ph.D. 1930, Harvard University
- Nan Byrd Smith, *Assistant Professorial Lecturer in Physical Education for Women*
B.S. in P.E. 1962, M.A. in Ed. 1966, George Washington University
- Stanley Sherrel Smith, *Lecturer in Psychology*
B.A. 1962, George Washington University
- Thomas Russell Smith, *Associate Professorial Lecturer in Journalism*
B.J. 1952, University of Missouri
- Walton Edward Smith, *Assistant Professor of Management*
B.S. 1960, M.S. 1962, University of Missouri
- William Arthur Smith, *Associate Professor of Mathematics*
B.A. 1941, M.A. 1947, Syracuse University
- John Michael Smothers, *Assistant Clinical Professor of Psychology*
B.A., M.A. 1955, Ph.D. 1961, University of Chicago
- Jeanne Ellen Snodgrass, *Associate Professor of Physical Education for Women*
B.A. 1952, Ohio Wesleyan University; M.S. in P.E. 1953, Smith College
- Israel Gregory Sohn, *Adjunct Professor of Geology*
B.S. 1935, City College, New York; M.A. 1938, Columbia University; Ph.D. 1965, Hebrew University, Jerusalem
- Richard Martin Soland, *Associate Professorial Lecturer in Business Administration*
B.E.E. 1961, Rensselaer Polytechnic Institute; Ph.D. 1964, Massachusetts Institute of Technology
- Henry Solomon, *Professor of Economics*
B.A. 1949, Brooklyn College; M.A. 1950, Ph.D. 1959, New York University
- Waldo Sommers, *Professor of Public Administration*
B.A. 1927, Heidelberg College; M.A. 1934, Ph.D. 1948, Yale University
- Lewis Stone Sorley III, *Lecturer in English*
B.S. 1956, U.S. Military Academy; M.A. 1963, University of Pennsylvania
- Eugene Lewis Speck, *Lecturer in Microbiology*
B.A. 1958, Brandeis University; M.S. 1961, University of Massachusetts; Ph.D. 1966, George Washington University
- Paul Eppler Spiegler, *Assistant Professorial Lecturer in Biological Sciences*
B.S. 1956, University of Maryland; M.A. 1959, George Washington University

Donald Fleming Squires, *Adjunct Lecturer in Biological Sciences*
B.A. 1950, Ph.D. 1955, Cornell University; M.A. 1952, University of Kansas

Robert Murry Stackhouse, *Studio Lecturer in Art (Painting)*

Loretta May Stallings, *Professor of Physical Education for Women; Director, Women's Athletics*

B.A. 1947, Stanford University; M.A. 1950, University of the Pacific; Ed.D. 1965, University of Texas

George Stambuk, *Professor of International Affairs, George Washington University Program, Naval War College Center, Newport, Rhode Island*
Abs.Jur. 1943, University of Zagreb, Yugoslavia; M.A. 1956, Ph.D. 1961, Indiana University

Selig Starr, *Associate Professorial Lecturer in Statistics*

B.A. 1940, Brooklyn College; M.A. 1951, Ph.D. 1962, George Washington University

Edward Steers, Jr., *Professorial Lecturer in Biochemistry*

B.S. 1959, Ph.D. 1963, University of Pennsylvania

Carl Steiner, *Associate Professor of German*

B.A. 1958, M.A. 1962, Ph.D. 1966, George Washington University

George Steiner, *Associate Professor of Music; Director of Orchestra*

B.S. 1938, Johns Hopkins University; Mus.B. 1938, Mus.M. 1940, Peabody Institute of the City of Baltimore

Carl Herbert Stem, *Assistant Professorial Lecturer in Economics*

B.A. 1957, Vanderbilt University; M.A. 1960, Ph.D. 1969, Harvard University

John Dallas Stempel, *Assistant Professorial Lecturer in Political Science*

B.A. 1960, Princeton University; M.A. 1963, Ph.D. 1965, University of California, Berkeley

Mykola Stepanenko, *Assistant Professor of Russian*

M.A. 1938, Pedagogical Institute, Poltava, Soviet Union; M.A. 1963, Syracuse University

John Elliott Stephens, *Studio Lecturer in Applied Music (Flute and Trumpet)*

Mus.B. 1951, Mus.M. 1962, Catholic University of America

Richard Walton Stephens, *Professor of Sociology*

B.A. 1951, Franklin and Marshall College; M.A. 1953, Ph.D. 1956, University of North Carolina at Chapel Hill

Elizabeth Weiss Stephenson, *Assistant Professor of Physiology*

B.S. 1947, University of Chicago; Ph.D. 1964, George Washington University

Edwin Lockwood Stevens, *Professor of Speech*

B.A. 1936, Rutgers, the State University; M.A. 1942, Columbia University

A. Brockie Stevenson, *Studio Lecturer in Art (Painting)*

*Charles Todd Stewart, Jr., *Professor of Economics*

B.A. 1946, M.A. 1948, Ph.D. 1954, George Washington University

Phyllis Langton Stewart, *Assistant Professor of Sociology*

B.A. 1961, M.A. 1962, California State College at Los Angeles; Ph.D. 1968, University of California, Los Angeles

Robert Gordon Stewart, *Lecturer in Art*

B.F.A. 1954, University of Pennsylvania

Eugene Almon Stone, *Assistant Professor of Mathematics*

B.A. 1960, Vanderbilt University; Ph.D. 1966, University of Virginia

Joseph Novak Stonesifer, *Associate Professor of Business Administration, George Washington University Program (Tidewater Area Center), Fort Monroe, Virginia*

B.S. 1936, University of Illinois; M.A. 1946, George Washington University

Keith Larry Storrs, *Instructor in Political Science*

B.A. 1962, Brigham Young University

Hiram Miller Stout, *Professor of International Affairs*

B.A. 1926, DePauw University; M.A. 1931, Ph.D. 1934, Harvard University

* On sabbatical leave spring semester 1970.

- James Ashley Straw, *Assistant Professor of Pharmacology*
B.S. 1958, Ph.D. 1963, University of Florida
- Karl Ernest Stromsem, *Professor of Public Administration*
B.A. 1930, Pomona College; Ph.D. 1935, University of California, Berkeley
- Margaret Sue Sullivan, *Assistant Professor of English*
B.A. 1956, Ph.D. 1966, Duke University; M.A. 1961, Auburn University
- Rafael Supervia, *Professor of Spanish*
Doctor en derecho 1927, Universities of Valencia and Madrid, Spain
- Jeffrey Charles Susbauer, *Associate Professorial Lecturer in Business Administration*
B.C.S. 1964, Seattle University; M.B.A. 1966, Indiana University; Ph.D. 1969, University of Texas
- Krystyna Marek Swiecicki, *Studio Lecturer in Art (Serigraphy)*
- Choy Tak Taam, *Professor of Mathematics*
B.S. 1942, University of Illinois; M.A. 1943, Ph.D. 1945, Harvard University
- Jane Seideman Takeuchi, *Lecturer in English*
B.A. 1962, Wellesley College; M.S. 1966, Georgetown University
- Roland Henry Tanck, *Associate Research Professor of Psychology*
B.A. 1939, University of Wisconsin; M.A. 1948, Ph.D. 1956, George Washington University
- Joseph Taney, *Studio Lecturer in Art (Advertising Design)*
- Marvin Jacob Taves, *Professorial Lecturer in Health Care Administration*
B.A. 1945, Hamline University; Th.M. 1945, B.D. 1947, Bethel College and Seminary; M.A. 1952, Ph.D. 1954, University of Minnesota
- Therion Tedder, *Associate Professorial Lecturer in Business Administration*
B.S. 1952, Florida State University; M.B.A. 1959, Air Force Institute of Technology
- Geza Teleki, *Professor of Geology*
Ph.D. 1936, University of Vienna, Austria
- Ira Rockwood Telford, *Professor of Anatomy*
B.A. 1931, M.A. 1933, University of Utah; Ph.D. 1942, George Washington University
- Douglas Harold Teller, *Associate Professor of Art*
B.A. 1956, Western Michigan University; M.F.A. 1962, George Washington University
- Ralph Raymond Temple, *Professorial Lecturer in Public Administration*
B.A. 1927, City College, New York; J.D. 1930, M.A. 1940, Ph.D. 1942, New York University
- Raphael Reginald Thelwell, *Assistant Professorial Lecturer in Business Administration*
B.S. 1951, Columbia University; M.S. 1956, Stevens Institute of Technology
- Klaus Thoenelt, *Associate Professor of German*
Staatsexamen 1956, Ph.D. 1961, University of Freiburg, Germany
- Raymond Edward Thomas, *Assistant Professor of Statistics; Director, University Computer Center*
B.A. 1955, M.A. 1957, George Washington University
- Ronald Thomas, *Lecturer in English*
B.A. 1958, M.A. 1960, Pennsylvania State University
- Irene Thompson, *Assistant Professor of Russian*
B.S. 1965, M.S. 1969, Georgetown University
- James Lengerd Thompson, Jr., *Assistant Professor of Accounting*
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- Wilcomb Edward Washburn, *Chairman, Department of American Studies, Smithsonian Institution; American Civilization*
B.A. 1948, Dartmouth College; Ph.D. 1955, Harvard University

- Emilio Weiss, *Deputy Director, Department of Microbiology, Naval Medical Research Institute; Virology*
 B.A. 1941, University of Kansas; M.S. 1942, Ph.D. 1948, University of Chicago
- Herbert Weissbach, *Acting Chief, Laboratory of Clinical Biochemistry, National Institutes of Health; Vitamins*
 B.S. 1953, City College, New York; M.S. 1955, Ph.D. 1957, George Washington University
- Myron Lee Wolbarsht, *Professor of Ophthalmology and Physiology, Duke University; Visual Research*
 B.A. 1950, St. John's College, Maryland; Ph.D. 1958, Johns Hopkins University
- Stephen Safford Yeandle, Jr., *Physicist, Laboratory of Biophysics, Naval Medical Research Institute; Experimental Biophysics*
 B.A. 1951, Cornell University; Ph.D. 1957, Johns Hopkins University
- Ralph Aubrey Young, *Consultant, International Monetary Fund; International Finance*
 B.A. 1923, Ohio Wesleyan University; M.B.A. 1925, Northwestern University; Ph.D. 1930, University of Pennsylvania
- Lorenz Eugene Zimmerman, *Clinical Professor of Ophthalmic Pathology; Ophthalmic Pathology*
 B.A. 1943, M.D. 1945, George Washington University

FIELD OF STUDIES CONSULTANTS—GRADUATE SCHOOL OF ARTS AND SCIENCES

- Vernon McKay, *Professor of African Studies, School for Advanced International Studies, Johns Hopkins University; African History*
 B.A. 1933, Baker University; M.A. 1934, Syracuse University; Ph.D. 1939, Cornell University
- Keith Melder, *Associate Curator, Division of Political History, Smithsonian Institution; American Civilization: Political History*
 B.A. 1954, Williams College; M.A. 1958, Ph.D. 1964, Yale University
- Robert Vogel, *Curator-in-Charge, Division of Mechanical and Civil Engineering, Smithsonian Institution; American Civilization: History of Technology*
 B.Arch. 1954, University of Michigan



APPENDIX: RECENTLY ESTABLISHED REGULATIONS

THE FOLLOWING UNIVERSITY REGULATIONS are under review and may be subject to change in connection with the establishment of judicial processes. Bulletins and handbooks incorporating any changes will be issued as appropriate.

The following resolution, submitted by the University Senate, was approved by the University's Board of Trustees on October 19, 1968:

Whereas, safety and order are essential preconditions of the learning process, and indeed of the very concept of a university; and

Whereas, The George Washington University is committed to protection of free speech and freedom of assembly, and to safeguarding the right of lawful protest on campus; and is committed equally to maintaining the peace and safety of the campus, in the knowledge that all rights are in jeopardy when violence and civil disorder prevail over law and reason;

Now, therefore, be it resolved by the Senate of The George Washington University: that in the event a demonstration at this University exceeds the bounds of free assembly and lawful advocacy, and demonstrators are engaging in unlawful acts which cause or imminently threaten injury to persons or property, or which obstruct or interfere with normal and necessary University activities, this body affirms the authority of the President, or other University officials designated to act in his absence, to take such reasonable steps, if possible after consultation with the Chairman of the Executive Committee of the University Senate and the President of the Student Body, as are required to restore and preserve order; including, if deemed necessary and appropriate, suspension of students or faculty engaging in such acts, and use of such law enforcement personnel as are needed to effect the removal, arrest, and prosecution of law violators. Any such suspension shall be reviewed by an appropriate tribunal as soon after order is restored as is practicably possible.

The following was approved by the University's Board of Trustees on October 19, 1968:

Any student suspended from The George Washington University on the grounds of exceeding the bounds of free assembly and lawful advocacy shall have his suspension reviewed by the Hearing Committee on Student Affairs of The George Washington University as soon after order is restored as is practicably possible.

The following resolution, submitted by the Student Life Committee, was approved by the University's Board of Trustees on October 19, 1968:

Be it resolved that The George Washington University: affirms its traditional commitment to freedom of expression (a) by continuing to permit business and government organizations which are recruiting employees to conduct their activities at designated places on campus, and (b) by placing no obstacle to students who may wish to protest the presence of such recruiters, provided, however, that such protest shall be orderly and shall not impede or disrupt the recruiter in his activities.

The University affirms its place as a forum for the free exchange of ideas (a) by assuring that guests invited to speak on this campus at duly scheduled meetings shall have the right to appear and to be heard, and (b) by sanctioning the freedom of students to express dissent from the views of the speaker, provided, however, that that expression of dissent be orderly and nonobstructive.

The University distinguishes between orderly protest and resistance-by-obstruction; it accepts the former as a legitimate expression of dissent while rejecting the latter as an abridgement of the freedoms of the individuals who may be its object.

The following was approved by the University's Board of Trustees on October 19, 1968:

The George Washington University is opposed to discrimination based on race, color, or creed. Such discrimination may have appeared in campus organizations in the past. In the future, however, no organization can be recognized or supported by the University unless it provides continued assurance of nondiscrimination in membership practices and in intent, considered adequate by relevant committees and officers of the University.

The following was approved by the University's Board of Trustees on October 19, 1968:

The University cannot condone violations of law, including violation of those laws which proscribe possession, use, sale, or distribution of certain drugs. Members of the academic community should know that administrative action, which may include dismissal from the residence halls, revocation of other privileges, or suspension or dismissal from the University, may be taken in order to protect the interests of the University and the rights of others.

The Board of Trustees reaffirms the responsibility of the President and the Faculty to continue to implement this policy.

The following resolution, submitted by the University Senate, was approved by the University's Board of Trustees on January 16, 1969:

Be it resolved by the Senate of The George Washington University: Any member of the University (including as members of the University all persons having a formal connection with the University)

(a) who engages in conduct that unreasonably obstructs teaching, research, and learning, or

(b) who unreasonably obstructs free access to members or guests of the University or to University buildings, or

(c) who disobeys general regulations of the University, or

(d) who damages University property or injures members or guests of the University,

may be punished for his conduct by dismissal from the University, or by some lesser disciplinary action, through procedures established within the University for the government of its members.

In order to insure due process, any student subject to dismissal or other disciplinary action on the grounds of violating any of the premises of this resolution shall have, at his discretion, the right of review of the action by the University Hearing Committee on Student Affairs.

CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Office of Admissions. Mailing address for all University offices unless otherwise indicated is The George Washington University, Washington, D.C. 20006.

Admission

Graduate

Arts and Sciences.....Dean of The Graduate School of Arts and Sciences
Education.....Dean of The School of Education
Engineering and Applied Science.....Dean of The School of Engineering
and Applied Science

Accounting, Business Administration, Business and Economic Statistics, Health Care Administration, International Business, Personnel Administration, Public Administration, Urban and Regional Planning
Dean of The School of Government and Business Administration

International Affairs and Public Affairs.....Dean of
The School of Public and International Affairs

Law.....Dean of The National Law Center
School of Medicine.....1331 H Street, Washington, D.C. 20005

Undergraduate.....Office of Admissions
Alumni Association.....Alumni Office

Medical Alumni Association.....1331 H Street, Washington, D.C. 20005
Financial Aid.....Student Financial Aid Office

Foreign Students.....Adviser to International Students
Gifts and Bequests.....Resources Program

Housing.....Housing Administrator
Off-campus and Noncredit Courses.....Dean of The College of General Studies

Student Employment.....Student and Alumni Career Services Office
Summer Sessions.....Dean of The Summer Sessions

Transcripts of Records.....Registrar
Veterans Education.....Registrar

ANNUAL ISSUES OF THE UNIVERSITY BULLETIN

Information concerning courses of instruction, programs, and faculties of the several colleges and schools will be found in the following separate issues of the University Bulletin. Requests must include your zip code.

College of General Studies.....Dean of the College
National Law Center.....Dean of the Center

Schedule of Classes: Fall and Spring Semesters.....Registrar
Schedule of Classes: Summer Sessions.....Dean of the Summer Sessions

School of Engineering and Applied Science.....Dean of the School
School of Medicine, Admissions Office, 1331 H Street, Washington, D.C. 20005

Summer Sessions.....Dean of The Summer Sessions
Undergraduate and Graduate Catalogue (Arts and Sciences,

Education, Government and Business Administration, Public
and International Affairs).....Office of Admissions

INDEX

A

- Absence, regulations concerning, *see* Attendance
- Academic work load:
 - Columbian College, 70-71
 - Division of University Students, 169
 - Graduate School of Arts and Sciences, 93-94, 95-96
 - Minimum hour-load required for doctoral study, 95-96, 121, 147-48
 - School of Education, 101
 - School of Government and Business Administration, 128, 137, 147-48
 - School of Public and International Affairs, 155
- Academic Status of the University, 14
- Accounting:
 - A.A. terminal curriculum, 81
 - B.B.A. degree requirements, 79, 128-31
 - Courses, 180-83
 - Department, 180-83
 - M.B.A. degree requirements, 136-40
- Accreditation, 14
- Achievement tests, 70, 168
- Activities, student, 59-64
- Administration, officers of, 18-20
- Admission, 23-27
 - By early decision, 24
 - For students from foreign institutions, 26-27
 - Graduate, 25-26, *see also* college, school, or division concerned
 - Readmission, 26
 - Transfer students, 24
 - Undergraduate, 23-25
 - University Students, Division of, 26, 168
 - With advanced standing, 24-25, 89-90, 95, 118, 140, 143, 146, 159
- Adult education:
 - In the College of General Studies, 14
 - In the Division of University Students, 167-70
 - M.A. in Ed. field, 116-17
- Advanced placement tests, 24-25
- Advanced standing, 24-25, 89-90, 95, 118, 140, 143, 146, 159
- Advisory Council for Arts and Sciences, 68
- Advisory system, Columbian College, 73
- Air Force ROTC, 51
- Alumni Association, 54
- Alumni Career Services, 59
- American Civilization:
 - Bachelor's and Master's degree requirements, 183-84
 - Courses, 184-87
 - Doctoral field, 184
- American Literature:
 - Courses, 266-68
 - Doctoral field, 262
 - Master's degree requirements, 262
 - Undergraduate Literature major, option in, 261-62
- American Studies Program, 183-87
- Amount of work, *see* Academic work load
- Anatomy Department, 187-89
 - Courses, 187-89
 - Doctoral fields, 187
 - Master's degree requirements, 187
- Annual events, student, 61-62
- Anthropology Department, 189-93
 - Bachelor's and Master's degree requirements, 189-90
 - Courses, 190-93
 - Departmental prerequisite, 190
- Appendix, recently established regulations, 452-53
- Application:
 - Fee, 23, 30
 - Fee for room reservation, 30
 - For graduate admission, 23, 25-26, 89-90
 - For graduation, 47
 - For undergraduate admission, 23-24
- Applied Statistics, *see* Statistics
- Art Department, 194-203
 - Bachelor's and Master's degree requirements, 194-95
 - Courses, 195-203
 - Departmental prerequisite, 198
- Art exhibits, 61
- Art History and Criticism, M.A. field, 194
- Art History and Theory:
 - Courses, 195-98
 - Undergraduate major, 194
- Art teaching field, 104-5
- Arts and Sciences, graduate school, *see* Graduate School of Arts and Sciences
- Arts and Sciences, undergraduate college, *see* Columbian College of Arts and Sciences
- Assistantships, 36, 97-98

Attendance, 43, 48, 71, 128, 155
 Auditor, 32, 46
 Automatic Data Processing specialization,
 B.B.A. degree, 132

Awards, 39-43

Awards for graduate study, sponsored, 38

B

Bachelor's degrees, *see* Degrees
 Balance sheet, 46
 Biochemistry Department, 203-5
 Courses, 204-5
 Doctoral fields, 203-4
 Master's degree requirements, 203
 Biological Sciences Department, 205-12
 Bachelor's and Master's degree require-
 ments, 206
 Courses, 207-12
 Departmental prerequisite, 206
 Doctoral fields, 206
 Biology:
 Courses, 207-9
 Doctoral fields, 206
 Master's field, 206
 Teaching field, 105
 Undergraduate major, 206
 Biomedical and related sciences, Master's
 and doctoral fields, 93
 Biometric Laboratory, 174
 Biophysics, graduate study, 212-15

Board of Trustees of the University,
 16-17

Botany:

Courses, 209-10
 Doctoral fields, 206
 Master's field, 206
 Undergraduate major, 206

Business Administration:

Bachelor's degree requirements, 79,
 128-30, 131-34
 Courses, 216-26
 Department, 215-29
 Doctoral study, 147-49
 Master's field degree requirements,
 136-40

Business and Economic Statistics:

B.B.A. degree requirements, 80,
 128-30, 134-35
 M.A. in Govt. degree requirements,
 136-39, 144

Business and Public Administration
 courses, 226-29

C

Calendar for 1969-70, 7-9
 Career Services, Student and Alumni, 59
 Catholic University of America, coop-
 erative AFROTC program, 51
 Ceramics, M.F.A. field, 195
 Certificates:
 Health Care Administration, 146
 Institute for Sino-Soviet Studies,
 164-65
 Certification, clinical, in Speech Pathol-
 ogy and Audiology, 392
 Certification for teachers, 124
 Certification of Chartered Life Under-
 writers, 150
 Certification of Public Purchasing Agents,
 150
 Changes in program of studies, 45-46,
 169-70
 Chartered Life Underwriters, certification
 of, 150
 Chemistry Department, 230-36
 Bachelor's and Master's degree require-
 ments, 230-31
 Courses, 231-36
 Doctoral fields, 231

Chemistry teaching field, 105
 Chinese Language and Literature
 courses, 236-38
 Chinese Studies, Bachelor of Arts field,
 362-63, *see also* Public and Interna-
 tional Affairs, School of
 Classical Archeology and Greek, under-
 graduate major, 194, 238
 Classics Department, 238-41
 Bachelor's degree requirements, 238
 Courses, 239-41
 Classification of students, 73
 Classroom Teaching, M.A. in Ed. field,
 116-17
 Clubs, departmental, 63
 College Entrance Examination Board
 tests, 24-25, 70, 168
 Colleges, schools, and divisions of the
 University, 13-14, 65-171
 Colloquia, Interuniversity:
 On Modern China, 164, 297
 On Russia and Eastern Europe, 164,
 297-98

Columbian College of Arts and Sciences, 65-86
 Academic work load, 70-71
 Advisory Council, 68
 Bachelor's degrees, 81-86
 Committees, 66-67
 Curricula, lower division, 75-81
 Dean's Council, lower division, 66
 Dean's Council, upper division, 67
 Degree requirements, 82-86
 Entrance requirements, 69-70
 Faculty, 65-66
 Honors Program, lower division, 71-72
 Lower division, 73-81
 Regulations, 70-73
 Sophomore Year in Paris program, 69
 Transfer, from lower division to upper division, 75
 Upper division, 81-86
 Commencement, *see* Graduation
 Committees:
 Of the Board of Trustees, 17-18
 Of the University, 20-21
See also college or school concerned
 Communist Affairs, graduate study and research in, 163-64
 Comparative Education, M.A. in Ed. field, 116-17
 Composition, Mus.M. field, 314
 Computer Center, University, 53-54
 Computer Programs Research project, 175

D

Dance teaching field, 105-6
 Dean's Council:
 Columbian College of Arts and Sciences, 66, 67
 Division of University Students, 167
 Graduate School of Arts and Sciences, 88
 School of Education, 99
 School of Government and Business Administration, 125
 School of Public and International Affairs, 153
 Dean's Honor List, School of Government and Business Administration, 129
 Dean's Honor List, School of Public and International Affairs, 156
 Dean's List, Columbian College, 72
 Degree programs, colleges and schools, 13-14

Concert program, 61
 Conduct, 48, 452-53
 Conducting, Mus.M. field, 314
 Consortium of Universities, 28, 50-51
 Consultants:
 Field of Studies, 451
 In Research, 445-51
 Contents, table of, 5-6
 Continuing student, 28
 Continuous registration, 30, 47, 91
 Convocation, *see* Graduation
 Cooperative programs, 50-52, 149-50
 Correspondence courses, 73, 130, 157
 Council for the School of Government and Business Administration, 126-27
 Counseling, Psychological Clinic, 58
 Course numbers, explanation of, 179
 Courses of instruction, 179-406
 Credit, 46
 Balance sheet, 46
 Explanation of amount of, 180
 For advanced placement examinations, 24-25
 For professional courses, granted by Columbian College, 74
 For service school courses, 25
 For summer school work, 47
 From other institutions, 25
 Transfer of, within the University, 46, 169-70
 Credit/no credit option, 44-45
 Curriculum, M.A. in Ed. field, 116-17

Degrees:

Associate in Arts, 75, 81
 Bachelor of Arts:
 In Education, 101-14
 Offered by Columbian College, 76, 81-85
 Offered by the School of Public and International Affairs, 80-81, 155-58, 362-63
 Bachelor of Business Administration, 128-35
 Bachelor of Science, 76, 81-85
 In Medical Technology, 77-78, 81-83, 85-86
 In Physical Education, 101-2, 115-16
 Combined Bachelor of Arts and Doctor of Medicine, 83
 Combined Master of Science and Doctor of Medicine, 93

Degrees (cont'd):

- Doctor of Business Administration, 147-49
- Doctor of Education, 120-23
- Doctor of Philosophy, 89-93, 95-97
- Doctor of Public Administration, 147-49
- Education Specialist, 119-20
- Master of Arts:
 - In Education, 116-19
 - In Government, 136-39, 144-45
 - In Health Care Administration, 136-39, 142-43
 - In Teaching, 123-24
- Offered by the Graduate School of Arts and Sciences, 89-95
- Offered by the School of Public and International Affairs, 158-62, 363-64
- Master of Business Administration, 135-42
- Master of Fine Arts, 89-95, 195, 392
- Master of Music, 89-95, 314
- Master of Public Administration, 136-39, 142-43
- Master of Science, 89-95
- Master of Urban and Regional Planning, 136-39, 143-44

- Departmental clubs, 63
- Departmental majors, Columbian College, 85
- Disadvantaged students grants, 35
- Dishonesty, regulations concerning, 45
- Dismissal of students, 44, 49, 452-53
- Dissertation requirements, 30, 48, 96, 97, 122, 148
- Distinction, degrees earned with, 48
- Division of University Students, *see* University Students, Division of
- Doctor of Medicine, combined degree programs, 83, 93
- Doctoral degrees, *see* Degrees
- Dormitories, 55-56
- Drama, *see* Speech and Drama Department
- Drama, and Speech, teaching field, 113-14
- Dramatic Art:
 - M.F.A. field, 392
 - Undergraduate major, 392
- Dropping courses, 30, 45

E

- Early Childhood Education, M.A. in Ed. field, 116-17
- Early decision plan, admission by, 24
- Earth Science teaching field, 106
- Economics Department, 241-48
 - Bachelor's and Master's degree requirements, 241
 - Courses, 242-48
 - Departmental prerequisite, 242
 - Doctoral fields, 241
- Economics group option, B.A. field in Public Affairs, 363
- Economics specialization, B.B.A. degree, 132
- Education Department, 248-61
 - Courses, 249-61
 - Departmental prerequisite, 251
 - Special methods courses, 251
- Education, School of, 99-124
 - Academic work load, 101
 - Committees, 99-100
 - Dean's Council, 99

Education, School of (cont'd):

- Degree requirements:
 - B.A. in Ed. 78, 101-14
 - B.S. in P.E., 78-79, 101-2, 115-16
 - Ed.D., 120-23
 - Ed.S., 119-20
 - M.A. in Ed. 118-19
 - M.A.T., 123-24
- Entrance requirements:
 - B.A. in Ed., 102
 - B.S. in P.E., 102
 - Ed.D., 120-21
 - Ed.S., 119
 - M.A. in Ed., 117-18
 - M.A.T., 123
- Faculty, 99
- Historical development, 100
- Scholarship requirements, 102, 118-19, 120
- Special Programs and Services, 123-24
- Teaching fields, 103-14
- Education, Special, *see* Special Education Department

Educational objectives, 12, *see also*
colleges, schools, and divisions
Educational Resources Information
Center (ERIC) Clearinghouse on
Higher Education, 175
Elementary Administration, M.A. in Ed.
field, 116-17
Elementary Education:
M.A. in Ed. field, 116-17
M.A.T. program 123-24
Teaching field, 106
Eligibility for student activities, 60-61
Emeriti officers and faculty, 407-8
Employed students' academic work load,
70-71, 101, 128, 155, 169
Employee Development, M.A. in Ed.
field, 116-17
Employment, student, 38, 59
Engineering and Applied Science, School
of, 13
English:
Composition courses, 263-64
Correct use of, 71, 129-30, 156-57
Literature courses, 264-66
Placement examination, 74
Requirement, 75
Teaching field, 107
Test of, as a foreign language, 26-27
English Department, 261-68
Bachelor's and Master's degree require-
ments, 261-62
Courses, 263-68
Departmental prerequisite, 262
Doctoral fields, 262
Entrance requirements, *see* college,
school, or division concerned
Epidemiology and Environmental
Health Department, 268-69
Courses, 268-69
Doctoral field, 268
Examinations, 45
Admission Test for Graduate Study
in Business, 136-37, 147
Advanced placement, 24-25
College Entrance Board, 24-25, 70, 168

F

Faculty, alphabetical list, 409-45
Federal Financial Management—
Accounting and Budgeting specializa-
tion, Accounting major, B.B.A. degree,
131
Fees, 28-31
Payment of, 31-32
Projected tuition increases, 31

Examinations (cont'd):

Comprehensive, for Ed.S. degree, 120
English as a foreign language, 26-27
English Composition Achievement test,
College Board, 70, 74, 168
For admission, 24, 24-25, 27, 70, 168
For placement in language courses, 74
For qualifying for advanced standing
or waiving curriculum requirements,
24-25, 30, 74, 75, 130, 157
Foreign language, for doctoral study,
96
Foreign language, for Master's
candidacy, 94-95, 159
General, for D.B.A. and D.P.A.
candidates, 147-48
General, for Ph.D. candidates, 96-97
Graduate Record, 89, 119, 121, 123,
136, 137, 147
Major, in Columbian College, 85
Major field, for Ed.D. candidates,
121-22
Master's Comprehensive:
Graduate School of Arts and
Sciences, 95
School of Education, 119
School of Government and Business
Administration, 138
School of Public and International
Affairs, 159-60
Miller Analogies Test, 119, 121, 123
National Teacher, 30, 48, 103
Oral, for Ed.S. degree, 120
Oral, in defense of dissertation, 97,
122, 148
Physical, 30, 55, 74, 326
Scholastic aptitude, 70, 168
Supporting field, for Ed.D. candidates,
121-22
Tool requirement, for doctoral study,
96
Exceptional children, education of
teachers of, 124

Fees (cont'd):

Psychological Clinic, 58
Reading Center, 52-53
Residence hall rates, 56
Speech and Hearing Clinic, 52
University Center, 29
Fellowships, 36-37, 97-98

Field-of-study majors, Columbian College, 84-85
 Field of Studies Consultants, 451
 Finance specialization, B.B.A. degree, 133
 Financial Aid, 33-39
 For foreign students, 38-39
 For graduate students, 36-38
 For undergraduate students, 33-35
 Law Enforcement Education program, 39
 Loan funds, 38
 Student employment, 38
 Financial regulations, 31-33
 Fine Arts:
 Courses, 198-203
 M.F.A. fields, 195
 Undergraduate major, 194
 Food service, 56
 Foreign Affairs, Intern Program, 162-63
 Foreign affairs, *see* International Affairs

Foreign language examinations:
 For doctoral study, 96
 For Master's candidacy, 94-95, 159
 Placement, 74
 Foreign language requirement, 75, 94-95, 96, 159, 362-63
 Foreign Students, 58
 Admission, 26-27
 Courses for, 263, 392
 Financial aid, 38-39
 Fraternities, social, 63
 French:
 Bachelor's and Master's degree requirements, 368
 Courses, 368-72
 Doctoral fields, 368
 Examinations:
 For doctoral study, 96
 For Master's candidacy, 94-95, 159
 Placement, 368
 Teaching field, 107

G

General Alumni Association, 54
 General examination:
 For D.B.A. and D.P.A. candidates, 147-48
 For Ph.D. candidates, 96-97
 General Science teaching field, 108
 Geochemistry:
 Doctoral field, 231, 274
 Master's degree requirements, 230-31, 273
 Geography and Regional Science Department, 269-73
 Bachelor's and Master's degree requirements, 269-70
 Classroom Teaching specialization, M.A. in Ed. degree, 270
 Courses, 270-73
 Geography teaching field, 108
 Geology Department, 273-78
 Bachelor's and Master's degree requirements, 273
 Courses, 274-78
 Doctoral fields, 274
 Teaching field in Earth Science, 106
 German Teaching field, 109
 Germanic Languages and Literatures Department, 278-81
 Bachelor's and Master's degree requirements, 279
 Courses, 279-81
 Doctoral fields, 279

Germanic Languages and Literatures Department (cont'd):
 Examinations:
 For doctoral study, 96
 For Master's candidacy, 94-95, 159
 Placement, 279
 Government and Business Administration, School of, 125-51
 Academic work load, 128, 137, 147-48
 Committees, 125
 Council, 126-27
 Dean's Council, 125
 Degree requirements:
 B.B.A., 79-80, 128-35
 Doctoral study, 147-49
 Graduate Certificate in H.C.A., 146
 M.A. in Govt., 136-39, 144-45
 M.A. in H.C.A., 136-39, 145-46
 M.B.A., 136-42
 M.P.A., 136-39, 142-43
 M. of Urb. and Reg. Plan., 136-39, 143-44
 Entrance requirements:
 Bachelor's study, 128
 Doctoral study, 147
 Graduate Certificate in Health Care Administration, 146
 Master's study, 136-37
 Faculty, 125

Government and Business Administration, School of (cont'd):
 Off-campus degree programs, 151
 Regulations, 128
 Scholarship requirements, 129, 138
 Special programs, 149-51
 Government Management Intern Scholarship program, 149
 Government of the University, 15
 Grades, 44-45, 90, 118, 138, 160, 169
 Graduate Record Examination, 89, 119, 121, 123, 136, 137, 147
 Graduate School of Arts and Sciences, 87-98
 Academic work load, 93-94, 95-96
 Admissions requirements, 89-90
 Consultants in research, 88, 445-51
 Dean's Council, 88
 Degree programs, 92-93
 Doctoral degree requirements, 89-93, 95-97
 Master's degree requirements, 89-95

H

Health and accident insurance, 58
 Health Care Administration:
 Certificate, 146
 Continuing Education program, 150
 Courses, 282-84
 Department, 282-84
 Doctoral study, 147-49
 International Institute, 150
 M.B.A. degree requirements, 136-41
 M.P.A. degree requirements, 136-39, 142, 143
 Health Records Administration, *see* Health Care Administration
 Health services, 57-58
 Hebrew courses, 241
 History:
 Of Education, M.A. in Ed. field, 116-17
 Of the University, 11-12
 Teaching field, 109-110
 History Department, 284-93
 Bachelor's and Master's degree requirements, 285
 Courses, 286-93
 Departmental prerequisite, 286
 Doctoral fields, 285
 Honors program, 285, 289

Graduate School of Arts and Sciences (cont'd):
 Faculty, 87-88
 Field of Studies consultants, 88, 451
 History and organization, 88-89
 Postdoctoral study, 97
 Regulations, 90-91
 Graduation:
 Application for, 47
 Dates, *see* University calendar
 Fees, 30
 Requirements, 47-48, 91
 Grants, 35, 39
 Graphics, M.F.A. field, 195
 Greek courses, 239, 240
 Greek, and Classical Archeology, undergraduate major, 194, 238
 Guidance, M.A. in Ed. field, 116-17
 Holiday season, 62
 Holidays, *see* University calendar
 Home study courses, 73, 130, 157
 Homecoming, 61
 Honor Roll, Columbian College, 72
 Honor societies, 62-63
 Honorary trustees of the University, 17
 Honors, 48
 Honors Program—Columbian College
 lower division, 71-72
 Courses, 293-94
 Honors program, history, 285
 Honors program, Secondary School, 170
 Honors, special, 48
 Hospital Administration, *see* Health Care Administration
 Hospitalization, 57-58
 Hours of instruction, 179
 Housing, 55-56
 Human Growth and Development, M.A. in Ed. field, 116-17
 Human Resources Research Office, 175-77
 Humanities, Master's and doctoral fields, 92

I

- Independent study plan, 83, 128
- Institute for Sino-Soviet Studies, 163-65
 - Certificate, 164-65
 - Courses, 294-99
 - Members of the Institute, 294
- Insurance, health and accident, 58
- Inter-faith Forum, 59
- International Affairs:
 - Bachelor's and Master's degree requirements, 363, 363-64, *see also* Public and International Affairs, School of
 - Doctoral study, *see* International Relations
- International Business:
 - B.B.A. degree requirements, 79, 128-30, 135
 - Doctoral study, 147-49
 - M.B.A. degree requirements, 136-40, 142

- International Communications, International Economics, and International Politics group options, B.A. field in
- International Affairs, 363
- International Students, 58
- International Institute for Health Care Administration, 150
- International Relations, doctoral study, 89-93, 95-97, 341
- Internships, 36-37, 123-24, 162-63
- Interuniversity research colloquia, 164
- Italian courses, 372
- Italian placement examination, 368

J

- Journalism Department, 299-301
 - Bachelor's degree requirements, 299-300
 - Courses, 300-301

L

- Language placement examinations, 74, *see also* department concerned
- Language requirement, Columbian College lower division, 75
- Latin:
 - Courses, 239-40
 - Undergraduate major, 238
- Latin American Studies, 301-3
 - Courses, 302-3
 - M.A. field, 301-2
 - Undergraduate major, 301
- Law Enforcement Education Program, 39
- Leave, Military, 47
- Leave of absence:
 - Graduate School of Arts and Sciences, 91, *see also* Continuous Registration
- Liberal Arts graduate school, *see* Graduate School of Arts and Sciences

- Liberal Arts undergraduate college, *see* Columbian College of Arts and Sciences
- Libraries, 15
- Library of Congress, cooperative program in American Civilization, 51-52, 184, 186
- Library regulations, 49
- Linguistics, 303-5
 - Courses, 304-5
 - M.A. field, 303-4
- Loan funds, 32, 36, 38, *see also* Law Enforcement Education Program
- Location of the University, 14-15
- Logistics Research project, 178
- Long-term Care Facilities, *see* Health Care Administration
- Lost and Found Office, 50

M

- Major field examination for Ed.D. candidates, 121-22
- Major fields in Columbian College, 83, 84
- Major quality-point index, 85, 129, 156

- Management Research Group, 150
- Managerial Accounting in Business specialization, Accounting major, B.B.A. degree, 131

Marketing specialization, B.B.A. degree, 133
 Master's Comprehensive Examinations, 95, 119, 138, 159-60
 Master's degrees, *see* Degrees
 Maternal and Child Health Care project, Operational and Demographic Analysis for, 178
 M.A.T. program in Elementary Education, 123-24
 Mathematical sciences, Master's and doctoral fields, 93
 Mathematical Statistics, *see* Statistics
 Mathematics Department, 305-11
 Bachelor's and Master's degree requirements, 305-6
 Courses, 306-11
 Departmental prerequisite, 306
 Doctoral fields, 306
 Mathematics teaching field, 110
 May Day, 62
 Meals, 56
 Medical services, 57-58

N

National Bureau of Standards, cooperative program, 52
 National Law Center, 13
 National Teacher Examinations, 30, 48, 103

O

Objectives of the University, 12 *see also* college or school concerned
 Off-campus degree programs, 14, 69, 151, 165
 Officers of Administration of the University, 18-20

P

Painting, M.F.A. field, 195
 Paris, Sophomore Year program in, 69
 Pathology Department, 319-20
 B.S. in Med.Tech. degree requirements, 319
 Courses, 320
 Doctoral fields, 319
 Master's degree requirements, 319
 Performing Arts, 61

Medical Technology:
 Courses, 320
 Degree requirements, 77-78, 81-83, 85-86, 319
 Medicine, School of, 13
 Microbiology Department, 311-13
 Courses, 312-13
 Doctoral fields, 312
 Master's degree requirements, 311
 Mid-semester warning, 72
 Military leave, 47
 Miller Analogies Test, 119, 121, 123
 Museology, M.F.A. field, 195
 Music Department, 313-19
 Bachelor's and Master's degree requirements, 313-14
 Courses:
 Applied, 317-19
 History and Literature, 314-16
 Theory, 316
 Music teaching field, 110
 Musicology, M.A. field, 314

Navy Graduate Financial Management program, 149
 Nondegree status, 26, 167-70

Operational and Demographic Analysis for Maternal and Child Health Care project, 178
 Oral examination, defense of dissertation, 97, 122, 148
 Oral examination, Ed.S. degree, 120
 Orchestra series, 61

Personnel Administration, degree requirements:
 M.A. in Govt., 136-39, 144
 M.B.A., 136-40, 142
 M.P.A., 136-39, 142, 143
 Personnel Management specialization, B.B.A. degree, 133
 Pharmacology Department, 321-22
 Courses, 321-22
 Doctoral fields, 321
 Master's degree requirements, 321

- Phi Beta Kappa, 62
- Philosophy Department, 323-25
 - Bachelor's and Master's degree requirements, 323
 - Courses, 323-25
- Philosophy of Education, M.A. in Ed. field, 116-17
- Physical Education:
 - Bachelor's degree requirements, 78-79, 101-2, 115-16
 - Courses, 326-32
 - Curricula, 78-79, 115-16
 - Departments, 325-32
 - M.A. in Ed. field, 116-17
 - Requirement, Columbian College lower division, 74
 - Teaching field, minor, 110-11
- Physical examinations, 30, 57, 74, 326
- Physical sciences, Master's and doctoral fields, 93
- Physics Department, 332-37
 - Bachelor's and Master's degree requirements, 332-33
 - Courses, 333-37
 - Departmental prerequisite, 333
 - Doctoral fields, 333
- Physics teaching field, 111
- Physiology Department, 337-40
 - Courses, 337-40
 - Departmental prerequisite, 337
 - Doctoral fields, 337
 - Master's degree requirements, 337
- Placement, student, 38, 59
- Placement tests, 74
- Policy on release of student information, 49
- Policy on Selective Service information, 50
- Policy Studies in Science and Technology, program of, 172-73
 - Advisory Committee, 173
 - Staff, 173
- Political Science Department, 340-51
 - Bachelor's and Master's degree requirements, 340
 - Courses, 341-51
 - Departmental prerequisite, 341
 - Doctoral fields, 340-41
 - Special honors, 340
- Politics group option, B.A. field in Public Affairs, 363
- Postdoctoral study, 97
- Premedical curriculum, 77
- Prizes, 39-43
- Probation:
 - Columbian College, 72
- Probation (cont'd):
 - Division of University Students, 169
 - School of Education, 102
 - School of Government and Business Administration, 129
 - School of Public and International Affairs, 156
- Professional courses, regulations concerning, Columbian College, 74
- Professional organizations, 63
- Program of Policy Studies in Science and Technology, 172-73
- Property responsibility, 50
- Proseminar in the major, Columbian College, 84-85
- Psychological Clinic, 58
- Psychology Department, 351-58
 - Bachelor's and Master's degree requirements, 352
 - Courses, 352-58
 - Departmental prerequisite, 352
 - Doctoral fields, 352
- Public Accounting specialization, Accounting major, B.B.A. degree, 131
- Public Administration:
 - Courses, 359-62 *see also* Business and Public Administration
 - Department, 358-62
 - Doctoral study, 147-49
 - M.A. in Govt. degree requirements, 136-39, 144, 145
 - M.P.A. degree requirements, 136-39, 142-43
- Public Affairs:
 - Bachelor's and Master's degree requirements, 363, 364, *see also* Public and International Affairs, School of
 - Public and International Affairs, School of, 153-65
 - Academic work load, 155
 - Committees, 153-54
 - Dean's Council, 153
 - Degree requirements:
 - For Bachelor's study, 155-58, 362-63
 - For the Certificate of the I.S.S.S., 164-65, 363
 - For Master's study, 158-62, 363-64
 - Entrance requirements:
 - For Bachelor's study, 155
 - For the Certificate of the I.S.S.S., 164
 - For Master's study, 158
 - Faculty and Staff of instruction, 153, 362
 - Foreign Affairs Intern Program, 162-63

Public and International Affairs,
School of (cont'd):
Regulations, 155
Scholarship requirements, 156, 160
Study abroad, 157
War College programs, 165

Public Purchasing Agents, certification
of, 150
Publications, student, 63

Q

Quality-point index, 44
Major, Q.P.I., 85, 129, 156

R

Reading Center, 52-53
Reading, M.A. in Ed. field, 116-17
Readmission, 26, 90
Readmitted student, 28
Recreation program, 61
Refunds, 32-33
Regional Study group option, B.A. field
in International Affairs, 363
Registration, 27-28
Regulations, 43-50, 452-53, *see also* Fees
and Financial Regulations, and college,
school, or division concerned
Rehabilitation Counseling, M.A. in Ed.
field, 116-17
Release of student information,
University policy on, 49
Religion Department, 364-67
Bachelor's and Master's degree require-
ments, 364-65
Courses, 365-67
Doctoral field in American Religious
History, 365
Religious Education, M.A. field,
364-65
Religious life, 59, 62
Religious organizations, 63
Research:
Arts and sciences fields, 92-93
Consultants in, 88, 445-51
Programs, 51, 150, 172-78
Sponsored, 174-78
Residence Halls, 55-56
Residence requirements, 48
Columbian College, 75, 81, 82, 86
Graduate School of Arts and Sciences:
For the Master's degrees, 93-94
For the Ph.D. degree, 95-96
School of Education:
For the Bachelor's degrees, 102
For the Ed.D. degree, 122-23
For the Ed.S. degree, 120
For the M.A. in Ed. degree, 118
For the M.A.T. degree, 123-24

Residence requirements (cont'd):
School of Government and Business
Administration:
For the B.B.A. degree, 129
For the Certificate in H.C.A., 146
For the Doctor's degrees, 148-49
For the Master's degrees, 138
School of Public and International
Affairs:
For the B.A. degree, 156
For the Certificate of the I.S.S.S.,
165
For the Foreign Affairs Intern
Program, 162-63
For the M.A. degree, 159
Romance Languages and Literatures
Department, 367-77
Bachelor's and Master's degree require-
ments in French and Spanish, 368
Courses, 368-77
Departmental prerequisite, 368, 372
Doctoral fields, 368
Examinations:
For doctoral study, 96
For Master's candidacy, 94-95, 159
Placement, 368
ROTC, Air Force, 51
Rules of the University, right to change,
49
Russian (*see also* Slavic Languages and
Literatures Department):
Courses, 377-81
Examinations:
For doctoral study, 96
For Master's candidacy, 94-95, 159
Placement, 377
Teaching field, 111-12

S

- Scholarship, 44-45, 48, *see also* college, school, or division concerned
- Scholarships:
For foreign students, 38-39
Graduate, 36, 37
Undergraduate, 33-35
- Scholastic aptitude tests, 70, 168
- Science and Technology, Policy Studies in, 172-73
- Sculpture, M.F.A. field, 195
- Secondary Administration, M.A. in Ed. field, 116-17
- Secondary Education, M.A. in Ed. field, 116-17
- Secondary School Honors program, 170
- Selective Service Information, University policy on, 50
- Semester hours, maximum allowed, *see* Academic work load
- Semester hours, explanation of, 180
- Senate, University, 21
- Service colleges, senior, graduate programs, 149
- Service school courses, credit for, 25
- Sigma Xi, 62
- Sino-Soviet Studies:
Certificate, 164-65
Courses, 294-99
Institute for, 163-65
- Slavic Languages and Literatures
Department, 377-81
Bachelor's and Master's degree requirements, 377
Courses, 377-81
Placement examination, 377
- Smithsonian Institution, cooperative program in American Civilization, 51, 184, 186-87
- Social fraternities, 63
- Social sciences, Master's and doctoral fields, 92
- Social sororities, 63
- Social Studies teaching field, 112
- Social Research Group, 178
- Sociology Department, 381-87
Bachelor's and Master's degree requirements, 382
Courses, 382-87
Departmental prerequisite, 382
Doctoral fields, 382
- Sophomore Year in Paris program, 69
- Sororities, social, 63
- Spanish:
Bachelor's and Master's degree requirements, 368
- Spanish (cont'd):
Courses, 372-77
Doctoral fields, 368
Examinations:
For doctoral study, 96
For Master's candidacy, 94-95, 159
Placement, 368
Teaching field, 112
- Spanish American Literature:
Bachelor's and Master's degree requirements, 368
Doctoral field, 368
- Special Education:
Courses, 387-91
Department, 387-91
Doctoral study, 120-23
Ed.S. degree requirements, 119-20
M.A. in Ed. field, 116-17
Teaching field, minor, 113
- Special Honors, 48
- Speech and Drama Department, 391-97
Bachelor's and Master's degree requirements, 392
Courses, 392-97
- Speech and Drama teaching fields, 113-14
- Speech and Hearing Clinic, 52
- Speech Pathology and Audiology:
Clinical certification preparation, 392
Master's field, 392
Undergraduate major, 392
- Sponsored research, 174-78
- Sports, 61
- Staff of Instruction, alphabetical list, 409-51
- Statistics:
Bachelor's degree requirements:
Applied, 397
Business and Economic, 80, 128-30, 134-35
Mathematical, 397-98
Courses, 398-404
Department, 397-404
Departmental prerequisite, 398
Doctoral fields, 398
Master's degree requirements:
Applied, 398
Business and Economic, 136-39, 144
Mathematical, 398
Specialization, Business Administration major, B.B.A. degree, 134
- Student Activities, 59-64
Eligibility for, 60-61
Office, 59-60

Student Affairs, Hearing Committee on, 60
 Student Assembly, 60
 Student Career Services, 59
 Student employment, 38, 59
 Student government, 60
 Student information. University policy on release of, 49
 Student Life, 55-64
 Committee on, 60
 Student organizations, 62-64

T

Teaching fields, School of Education, 103-14
 Terminal curriculum in Accounting, 81
 Tests, *see* Examinations
 Thesis requirements, 48
 Graduate School of Arts and Sciences, 95
 School of Education, 119
 School of Government and Business Administration, 139
 School of Public and International Affairs, 160
 Traineeships, 36-37, 97-98

U

University Center, 56-57
 Fee, 29
 University Students, Division of, 167-70
 Academic work load, 169
 Dean's Council, 167
 Entrance requirements, 168
 Regulations, 168-70
 Scholarship requirements, 169
 Secondary School Honors program, 170
 Urban Affairs, cooperative program with Virginia Polytechnic Institute, 149-50

V

Veterans Education, 53
 Virginia Polytechnic Institute, cooperative program in Urban Affairs, 149-50

W

Waiver examinations, 75
 War College programs, 149, 165
 Warnings, mid-semester, 72

Z

Zoology:
 Courses, 210-12
 Doctoral fields, 206

Student Personnel Work in Higher Education, M.A. in Ed. field, 116-17
 Student publications, 63
 Student services, 55-59
 Students, classification of, 73
 Study abroad, 69, 157
 Summer school credit, 47
 Summer Sessions, 171
 Suspension, 31-32, 43, 45, 72, 102, 129, 156, 169, 452-53

Transcripts of record, 31, 46
 Transfer within the University, 27, 46, 75, 94, 169-70
 Transfer students, admission, 24
 Transportation and Traffic Management specialization, B.B.A. degree, 134
 Trustees:
 Board of, 16-17
 Committees of the Board of, 17-18
 Honorary, 17
 Tuition, 28-29
 Deposit, 24, 30
 Projected increases, 31

Urban Affairs group option, B.A. field in Public Affairs, 363
 Urban and Regional Planning:
 Courses, 404-6
 Department, 404-6
 M.A. in Govt. degree requirements, 136-39, 144, 145
 M.P.A. degree requirements, 136-39, 142, 143
 M. of Urb. and Reg. Plan. degree requirements, 136-39, 143-44

Vocational counseling, 58

Withdrawal, 30, 32-33, 45, 91
 Work load, *see* Academic work load

Zoology (cont'd):
 Master's field, 206
 Undergraduate major, 206

COLLEGES AND SCHOOLS—DEGREE PROGRAMS

COLUMBIAN COLLEGE OF ARTS AND SCIENCES: Associate in Arts (A.A.), Bachelor of Arts (B.A.), Bachelor of General Studies (B.Gen.Std.), Bachelor of Science (B.S.), Bachelor of Science in Environmental Health (B.S. in Env.Health), Bachelor of Science in Geodetic and Cartographic Science (B.S. in Geod. and Cart.Sc.), Bachelor of Science in Medical Technology (B.S. in Med.Tech.), and Bachelor of Science in Oceanography (B.S. in Ocea.)

GRADUATE SCHOOL OF ARTS AND SCIENCES: Master of Arts (M.A.), Master of Fine Arts (M.F.A.), Master of Music (Mus.M.), Master of Science (M.S.), and Doctor of Philosophy (Ph.D.)

SCHOOL OF MEDICINE: Doctor of Medicine (M.D.)

NATIONAL LAW CENTER: Juris Doctor (J.D.), Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), Master of Comparative Law (American Practice) (M.Comp.L.(Am.Prac.)), and Doctor of Juridical Science (S.J.D.)

SCHOOL OF ENGINEERING AND APPLIED SCIENCE: Bachelor of Science (Civil Engineering) (B.S. (C.E.)), Bachelor of Science (Electrical Engineering) (B.S. (E.E.)), Bachelor of Science (Measurement Science) (B.S. (Meas. S.)), Bachelor of Science (Mechanical Engineering) (B.S. (M.E.)), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

SCHOOL OF EDUCATION: Bachelor of Arts in Education (B.A. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Teaching (M.A.T.), Master of Arts in Education (M.A. in Ed.), Education Specialist (Ed.S.), and Doctor of Education (Ed.D.)

SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION: Bachelor of Business Administration (B.B.A.), Bachelor of Science in General Studies (B.S. in Gen.Std.), Master of Arts in Government (M.A. in Govt.), Master of Arts in Health Care Administration (M.A. in H.C.A.), Master of Business Administration (M.B.A.), Master of Public Administration (M.P.A.), Master of Science in Administration (M.S. in Adm.), Master of Science in Business Administration (M.S. in B.A.), Master of Urban and Regional Planning (M. of Urb. and Reg.Plan.), Graduate Certificate in Health Care Administration (Grad.Cert. in H.C.A.), Doctor of Business Administration (D.B.A.), and Doctor of Public Administration (D.P.A.)

SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS: Bachelor of Arts (B.A.), Certificate of the Institute for Sino-Soviet Studies (Cert. of I.S.S.S.), Master of Arts (M.A.), and Master of Science in International Affairs (M.S. in I.A.)

THE GEORGE WASHINGTON UNIVERSITY

COLUMBIA'S COLLEGE OF ARTS AND SCIENCES, 1821

THE GRADUATE SCHOOL OF ARTS AND SCIENCES, 1893

THE SCHOOL OF MEDICINE, 1825

THE NATIONAL LAW CENTER, 1895

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE, 1883

THE SCHOOL OF EDUCATION, 1907

THE SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION, 1928

THE SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS, 1928

THE COLLEGE OF INTERNATIONAL STUDIES, 1952

THE DIVISION OF UNIVERSITY STUDENTS, 1930

THE SUMMER SESSIONS, 1906

THE UNIVERSITY HOSPITAL, 1895

THE GEORGE WASHINGTON UNIVERSITY BULLETIN



SCHOOL
OF
MEDICINE

1970-1971

CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Office of Admissions. Mailing address for all University offices unless otherwise indicated is The George Washington University, Washington, D.C. 20006.

Information concerning courses of instruction, programs, and faculties of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on page 154. Your zip code is essential for mailing catalogues.

Admission

Graduate

Arts and Sciences.....Dean of The Graduate School of Arts and Sciences
Education.....Dean of The School of Education
Engineering and Applied Science.....Dean of The School of Engineering
and Applied Science

Accounting, Business Administration, Business and Economic Statistics, Health Care Administration, International Business, Personnel Administration, Public Administration, Urban and Regional Planning

Dean of The School of Government and Business Administration

International Affairs and Public Affairs.....Dean of
The School of Public and International Affairs

Law.....Dean of The National Law Center

School of Medicine.....1331 H Street, Washington, D.C. 20005

Undergraduate.....Office of Admissions

Alumni Association.....Alumni Office

Medical Alumni Association.....1331 H Street, Washington, D.C. 20005

Financial Aid.....Student Financial Aid Office

Foreign Students.....Adviser to International Students

Gifts and Bequests.....Development Program

Housing.....Housing Administrator

Off-campus and Noncredit Courses.....Dean of The College of General Studies

Student Employment.....Student and Alumni Career Services Office

Summer Sessions.....Dean of The Summer Sessions

Transcripts of Records.....Registrar

Veterans Education.....Registrar

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**THE SCHOOL OF MEDICINE
1970-1971**

WASHINGTON, D.C. 20005



CONTENTS

| | |
|------|---|
| Page | |
| 5 | Calendar of the School of Medicine |
| 7 | The School of Medicine |
| 32 | The University Hospital |
| 36 | Alumni and Allied Associations |
| 39 | Courses of Instruction |
| 39 | Anatomy |
| 42 | Anesthesiology |
| 43 | Biochemistry |
| 45 | Clinical Engineering |
| 46 | Dermatology |
| 47 | Epidemiology and Environmental Health |
| 48 | Medical and Public Affairs |
| 49 | Medicine |
| 55 | Microbiology |
| 58 | Neurological Surgery |
| 58 | Neurology |
| 59 | Obstetrics and Gynecology |
| 62 | Ophthalmology |
| 63 | Orthopaedic Surgery |
| 63 | Otolaryngology |
| 64 | Pathology |
| 68 | Pediatrics |
| 71 | Pharmacology |
| 73 | Physical Medicine and Rehabilitation |
| 74 | Physiology |
| 77 | Psychiatry |
| 79 | Radiology |
| 80 | Surgery |
| 82 | Urology |
| 84 | The University: History and Organization, Academic Status |
| 85 | The Board of Trustees of the University |
| 87 | Officers of Administration |
| 88 | The School of Medicine Faculty and Staff of Instruction |
| 129 | Assistants in Research and Instruction |
| 137 | The School of Medicine Record for 1969-70 |
| 137 | Students Registered |
| 143 | Summaries of Registration |
| 146 | Recipients of the Degree of Doctor of Medicine |
| 149 | Appendix: Recently Established Regulations |
| 151 | Index |
| 154 | Annual Issues of the University Bulletin |

1970

JULY

| S | M | T | W | T | F | S |
|----|----|----|----|----|----|----|
| | | | 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 26 | 27 | 28 | 29 | 30 | 31 | |

AUGUST

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| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 |
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| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | 31 | | | | | |

SEPTEMBER

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| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | | | |

OCTOBER

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NOVEMBER

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DECEMBER

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1971

JANUARY

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FEBRUARY

| S | M | T | W | T | F | S |
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| 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
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MARCH

| S | M | T | W | T | F | S |
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| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | 31 | | | |

APRIL

| S | M | T | W | T | F | S |
|----|----|----|----|----|----|----|
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MAY

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| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | 31 | | | | | |

JUNE

| S | M | T | W | T | F | S |
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| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | | | |

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THE CALENDAR 1970-71*

1970-71 FALL SEMESTER

- September 10* Registration *Thursday*
September 11-14 Orientation for first-year students *Friday-Monday*
September 14 Opening Assembly *Monday*
September 15 Classes begin *Tuesday*
November 11 Veterans Day (holiday) *Wednesday*
November 25 Thanksgiving recess begins after last class *Wednesday*
November 30 Classes resume *Monday*
December 19 Christmas recess begins after last class *Saturday*
January 4 Classes resume *Monday*
January 18-23 Examination period *Monday-Saturday*

1971 SPRING SEMESTER

- January 25* Spring-semester classes begin *Monday*
February 15 Winter Convocation (holiday) *Monday*
April 8 Spring recess begins after last class *Thursday*
April 12 Classes resume *Monday*
May 21 Last day of spring-semester classes *Friday*
May 22-28 Examination period *Saturday-Friday*
June 6 Commencement *Sunday*

*The examination schedule and semester breaks do not apply to third- and fourth-year students.
See Special Schedule.



THE SCHOOL OF MEDICINE*

Dean of the Medical Center John Parks
Associate Deans of the Medical Center J.J. Feffer,
A.M. Griffin, C.A. Lowe, F.N. Miller, Jr.

THE FACULTY

Professors J.P. Adams, P.C. Adkins, F.D. Allan, L.K. Alpert, Seymour Alpert, R.H. Barter, Brian Blades, Halla Brown, T.M. Brown, C.A. Caceres, Paul Calabrisi, C.S. Coakley, L.R. Culbertson, Spyros Doxiadis (*Visiting*), W. R. Duryee (*Research*), J.M. Evans, H.L. Feffer, J.J. Feffer, C.M. Goss (*Visiting*), E.A. Gould, A.M. Griffin, P.P. Griffin, L.J. Griffith (*Visiting*), J.A. Halsted, Murdock Head, F.P. Heald, R.S. Higdon, J.C. Houck, Rudolph Hugh, W.N. Jensen, T.N. Johnson, R.A. Kenney, C.T. Klopp, S.L. Leikin, G.S. Letterman, R.S. Lourie, H.G. Mandel, A.M. Margileth, J.W. Millar, F.N. Miller, Jr., William Newman, Sean O'Reilly, John Parks, R.C. Parlett, A.E. Parrish, R.H. Parrott, T.M. Peery, J.G. Randolph, J.E. Rankin, Mary Louise Robbins, M.J. Romansky, J.G. Sites, B.W. Smith, J.C. Smith, W.W. Stanbro, Harold Stevens, Irene Tamagna, I.R. Telford, C.S. Tidball, C.R. Treadwell, G.V. Vahouny, J.W. Watts, F.W. Wolff, Leon Yochelson

Clinical Professors M.G. Alper, W.A. Howard, W.S. McCune, H.V. Rizzoli

Associate Professors L.F. Affronti, T.C. Alford, W.E. Anderson, Gordon Avery, J.M. Bacos, J.M. Bailey, K.L. Becker, Alexander Breslow, S.W. Bush, Juan Calatayud, Marie Cassidy, J.B. Christensen, H.W. Clark, Jr. (*Research*), V.H. Cohn, Jr., Milton Corn, J.A. Curtin, Leon Cytryn, Angelo D'Agostino, D.W. Delaney, W.O. Dobbins III, J.A. Dowling, B.S. Epstein, S.E. Fabro (*Research*), W.R. Felts, Jr., B.S. Fine, R.C. Fowler, D.H. Glew, Jr., Margaret Gutelius, C.R. Hartman, Ariel Hollinshead (*Research*), Wellington Hung, Dorothy Huntington (*Research*), M.H. Jacobson, W.R. Jondorf (*Research*), Paula Kaiser, G.A. Kelser, Jr., Peter Kenmore, R.P. Kernan (*Visiting*), K.S. Kim (*Research*), N.C. Kramer, Marie-Louise Levy, R.G. Loudon, W.L. Marsh, D.J. Massaro, Rashid Massumi, A.F. Mastellone, Paul Mazel, J.E. McClenathan, Larry McGowan, Ruth McKay, C.F. Murphy, J.P. Nasou, W.J. Nelson, A.F. North, Jr., J.B. O'Connell, J.C. Penhos (*Research*), Arthur Peschin, Lawrence Pierce, H.C. Pierpont, Lois Platt, Melvin Reich, Rebecca Rieger (*Research*), Patricia Russell, L.P. Scott III, C.W. Shilling, P.E. Shorb, Jr., Irene Siu, E.V. Soto, Elizabeth Tidball (*Research*), N.T. Tsangaris, J.K. Viktora (*Research*), John Watt, Jr., Mary Watt, Benny Waxman, Don Wenger, Bernard Wortman (*Research*)

*The Faculty, Executive Faculty, Dean's Council, and committee members are for the academic year 1969-70.
The President of the University, the Vice President for Academic Affairs, the Registrar of the University, and the Director of Admissions of the University are ex officio members of the Faculty and the Executive Faculty.

Associate Clinical Professors J.J. McFarland, Jr., W.P. McKelway
Assistant Professors E.N. Albert, G.P. August, J.S. Bailey (*Research*), Ann
 Barnet, W.H. Barton, C.M. Berlin, Jr., Gerrit Besselaar, H.A. Bradford,
 Shui-chin Chen, Yang-Ming Chu, A.C. Chung, Mary Coleman, R.M. Cole-
 man, S.H. Danovitch, Mervyn Elgart, Gloria Eng, S.A. Fagen (*Research*),
 J.D. Finkelstein, Rona Fisher (*Research*), J.L. Fox, Nancy France, D.S.
 Friendly, Whei-Rung Fu, Linda Lou Gallo (*Research*), W.S. Gilbert, J.N.
 Goldman, P.A. Gorman, Richard Granke, Elsa Greenberg (*Research*), L.M.
 Greenberg, H.M. Grigorian, G.A. Hahn (*Research*), Allan Hall, Suzanne
 Hammersberg, Kun-yen Huang, M.J. Jackson, C.B. Jacobson, F.S. Jannotta,
 B.F. Johnson (*Research*), E.N. Kassira, S.G. Kent, Philip Klubes (*Research*),
 Marilyn Koering, E.N. Kraybill, M.E. Landay, J.R. Lilly, Ann Lodge (*Re-
 search*), Emanuele Mannarino, J.L. Marlow, W.B. McAvoy, G.A. Morales,
 Nasser Movassaghi, C.H. Oliver, Jr., M.N. Ozer, F.A. Peck, L.W. Perry,
 J.R. Puig, H.B. Richardson, Jr., C.A. Rigg, Barbara Roth-Schechter, H.I.
 Rudman, T.R. Shworles, Elizabeth Stephenson, J.A. Straw, Lovisa Tatnall
 (*Research*), Glenn Walker, M.W. Werthmann, Jr., H.S. Wicker, Karl Wipp-
 linger, Philip Witorsch, G.L. Wright, Jr., Henry Yeager, Jr., B.C. Zook
Assistant Clinical Professor J.L. Levine
Instructors L.F. Arias-Bernal, Tryggvi Asmundsson, J.I. Auñón, W.R. Ayers
 (*Research*), Roberta Ballard, R.A. Blum, C.H. Chan, Glenna Fitzgerald,
 Anne Fletcher, Mary Flumerfelt, S.I. Granger, Sharon Kempf, Sau-Wah
 Kwan, R.A. Lavine, J.L. Mabon, Hildegard Manitsas, Shirley McMahon,
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 Beneta Peacock, Mary Salto, Mustafa Saleem, Ruth Stein, Jane Todaro, S.G.
 Werner

Associate Dean of the Medical Center, for Research C.A. Lowe
Administrator of the University Hospital and Clinic V.F. Ludewig

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 J.G. Sites, Harold Stevens, N.T. Tsangaris

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Professors J.P. Adams, Brian Blades, C.A. Caceres, Paul Calabrisi, C.S. Con-
 ley, L.R. Culbertson, J.J. Feffer, A.M. Griffin, P.P. Griffin, Murdock Heald,
 F.P. Heald, R.S. Higdon, W.N. Jensen, R.A. Kenney, C.T. Klopp, H.C.
 Mandel, J.W. Millar, F.N. Miller, Jr., Sean O'Reilly, John Parks, R.C. Par-
 lett, A.E. Parrish, T.M. Peery, J.E. Rankin, Mary Louise Robbins, J.G. Sites,
 B.W. Smith, J.C. Smith, W.W. Stanbro, Harold Stevens, I.R. Telford, C.S.
 Tidball, C.R. Treadwell, Leon Yochelson
Clinical Professors M.G. Alper, W.A. Howard, W.S. McCune, H.V. Rizzoli
Associate Professors W.E. Anderson, V.H. Cohn, Jr., B.S. Fine, G.A. Kelsor,
 Jr., W.J. Nelson, John Watt, Jr.

*The Dean and Associate Deans of the Medical Center, the Medical Director of the University
 Clinic, the Administrator of the University Hospital and Clinic, and the President of the Medical
 Alumni Association are ex-officio members of the Dean's Council.

Associate Clinical Professors J.J. McFarland, Jr., W.P. McKelway
 Assistant Professor Mervyn Elgart
 Assistant Clinical Professor J.L. Levine
 Associate Dean of the Medical Center, for Research C.A. Lowe
 Administrator of the University Hospital and Clinic V.F. Ludewig

COMMITTEES*

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 Melvin Reich, P.E. Shorb, Jr., Harold Stevens, F.W. Wolff, S.W. Barefoot, Jr.
 (*Student Representative*)

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COMMITTEE ON LIBRARY

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 Crawford (*Student Representative*)

*The Dean and Associate Deans of the Medical Center, the Medical Director of the University Clinic, the Administrator of the University Hospital and Clinic, and the President of the Medical Alumni Association are ex officio members of all committees.

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P.C. Adkins, G.A. Kelser, Jr., J.G. Sites, C.R. Treadwell

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C.S. Tidball, *Chairman*
E.N. Albert, Joan Blanchette, Marie Cassidy, J.N. Goldman, I.R. Telford

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J.P. Adams, Marion Corddry, F.A. Menk, C.H. Walther

ADVISORY COMMITTEE ON REHABILITATION

Irene Tamagna, *Chairman*
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Milton Gusack, Peter Kenmore, Paul Mazel, N.T. Tsangaris

ADVISORY COMMITTEE ON TEACHING AIDS

F.D. Allan, *Chairman*
Gordon Avery, D.H. Glew, Jr., R.A. Kenney, W.W. Stanbro, J.A. Straw, R.W. Schulz (*Student Representative*)

STUDENT ADVISORY COMMITTEE TO THE DEAN

Maureen Edwards, J.R. Emmett, Roberta Katlan, R.W. Schulz, L.A. Shapiro, R.S. Woodward

General Information

THE SCHOOL OF MEDICINE OF GEORGE WASHINGTON UNIVERSITY has a distinguished history that goes back more than a century. In March, 1825, the School opened with the intention of building "a medical school commensurate with

the progress and demands of a rising metropolis, and the improvement of service throughout the country." The School of Medicine, the eleventh oldest in the country, has met this responsibility by providing its students with a foundation in the medical sciences upon which they have built medical careers in practice, teaching, research, or administration.

In 1844, the School took on a new dimension when Congress granted it the use of the Washington Infirmary. Thus one of the earliest general teaching hospitals in the Nation was established in Washington.

At the turn of the century the School was located at its present site—in the center of Washington—close to world-renowned library facilities, comprehensive government medical museums, and numerous federal medical research and scientific establishments.

The distinguished history of the George Washington University School of Medicine closely parallels academic advances and medical progress of the Nation. The School has contributed to both.

The George Washington University Medical Center, established in 1966, consists of the School of Medicine, the University Hospital, the University Clinic, and affiliated hospitals.

OBJECTIVES

The purpose of the School of Medicine is to prepare men and women in the art and science of medicine to meet the health needs of a growing, ever-changing society. It is the responsibility of the School to provide its students with a systematic plan of instruction in the basic medical sciences, with well-guided clinical experience, with opportunities for expression in research, and with a philosophy in keeping with the highest ethics of the profession.

To carry out its program, the School maintains a well qualified faculty and makes use of facilities which provide exceptional opportunities for research and clinical training in the Washington metropolitan area.

PLAN OF INSTRUCTION

The Faculty and Administration of the School of Medicine have developed and initiated a program of medical education through careful study of past performance, present opportunity, and future need.

Students differ widely in their interests and abilities. Each student is encouraged to maximal achievement within his own limits. This is accomplished by a balanced program of required and elective courses that permit individual scholarly development in specialized medical sciences and research.

The curriculum provides graduated instruction, beginning with the basic medical sciences and expanding to include the more complex aspects of health maintenance and care of the sick. It provides a broad basic preparation for a career in medicine.

In the first year, the schedule begins with an orientation period designed to introduce the new students to the Faculty, the upperclassmen, and the environment for their medical education.

The first semester is devoted to the study of the sciences (anatomy and biochemistry) concerned with the structure and composition of the normal human body. In the second semester of the first year, the science of normal function

is further emphasized by courses in physiology. These studies of the normal provide a basis for the emphasis on health maintenance, which is a strong positive characteristic of the University's new teaching program. During the second semester the student is also introduced to the concept of disease in a course in microbiology, where the various microbial agents and their effects upon the human body are studied. Elective courses are offered in the second semester of the first year and provide an opportunity for the student to begin the development of special interests under the guidance of skilled advisers.

The basic courses of the first semester of the second year are pathology and pharmacology. In the former the student learns the nature and causes of disease as well as the alterations produced by disease in the tissues and fluids of the human body. He learns to recognize and evaluate the significance of the abnormal. Pharmacology provides an understanding of the mode of action of the various agents employed in the treatment of the sick, and emphasizes the safest and most effective means for their use. Opportunities for elective study are increased during the second year.

The second semester of the second year and the first semester of the third year are planned to acquaint the student with the principles and methods of clinical diagnosis and therapy, and to develop in him an awareness of the physician's responsibility to his patients. The basic concepts of laboratory medicine are taught in special laboratory facilities. During the second semester of the second year, three half days are available each week for electives.

The fall semester of the third year begins with 4 weeks of concentrated lectures on clinical subspecialties such as dermatology, neurology, neurological surgery, ophthalmology, otolaryngology, and urology.

During the final 20 months of the curriculum, each student has a 13-month clinical clerkship assignment in the University Hospital and Clinic and in affiliated hospitals. Patients with a wide variety of illnesses are assigned to each



student for close personal study under the guidance of a faculty skilled in the various specialties of medical practice. In the course of the clerkship, the student is given increasing responsibility as he demonstrates competence and professional maturity.

During a 24-week elective period, each student has an opportunity to explore general practice, specialty practice, or areas of research which may be of help in deciding the direction of his career. Students with exceptional interests and proven ability may be permitted to spend their elective period in other universities, including those of foreign countries, but most students will find ample opportunities in the University's own published schedule of approximately 150 different electives for upperclassmen.

Courses in the recently established Department of Clinical Engineering are available for elective credit to students interested in this increasingly important field.

CURRICULUM

A. The Basic Medical Sciences

| | | |
|--------------------|-----------------------|--|
| FIRST YEAR | TERM I (16 weeks) | ANATOMY AND BIOCHEMISTRY |
| | TERM II (16 weeks) | PHYSIOLOGY AND MICROBIOLOGY plus 4 semester-hour credits of electives in Anatomy and Biochemistry |
| (16-week vacation) | | |

| | | |
|----------------|------------------------|--|
| SECOND YEAR | TERM III (16 weeks) | PATHOLOGY AND PHARMACOLOGY plus 4 semester-hour credits of electives in Physiology and Microbiology |
| | TERM IV (16 weeks) | |

B. The Intermediate Terms

PHYSICAL DIAGNOSIS, LABORATORY MEDICINE, PSYCHIATRY, INTRODUCTORY CLINICAL LECTURES
plus 4 semester-hour credits of electives in Pathology, Pharmacology, and others

| | | |
|---|-----------------------------------|--|
| THIRD AND FOURTH YEARS (the last 84 weeks in rotation, including 4-week vacation) | TERM V (4 weeks) | LECTURES ON CLINICAL SUBSPECIALTIES plus one semester-hour credit of elective in Medicine, Surgery, Obstetrics and Gynecology, Pediatrics, Psychiatry, and others |
| | CLINICAL CLERKSHIPS (56 weeks) | |

C. Patient Care

INPATIENT CLERKSHIPS:
Psychiatry (4 weeks), Medicine (12 weeks), Surgery (12 weeks), Obstetrics and Gynecology (8 weeks), Pediatrics (8 weeks)

OUTPATIENT CLERKSHIPS:
General Medicine and Medical Specialties (8 weeks), Emergency Room (4 weeks)

D. Career Electives

SUPPLEMENTARY CLINICAL CLERKSHIPS OR BASIC SCIENCE OR CLINICAL RESEARCH

DEGREES

The four-year program of the School of Medicine, described above, leads to the degree of Doctor of Medicine.

In cooperation with Columbian College of Arts and Sciences, a seven-year curriculum leading to the combined degrees of Bachelor of Arts and Doctor of Medicine is offered. In cooperation with the Graduate School of Arts and Sciences a program leading to the combined degrees of Master of Science and Doctor of Medicine is offered.

The basic science departments of the School of Medicine cooperate with the Graduate School of Arts and Sciences in offering the degree of Science in the fields of anatomy, biochemistry, microbiology, pathology, pharmacology, and physiology; and in directing the research of candidates for the degree of Doctor of Philosophy in more than fifty fields of the medical sciences.

EQUIPMENT AND BASIC SCIENCE FACILITIES

Facilities for the School of Medicine are located at 1331, 1335, 1337, and 1339 H Street, N.W., in downtown Washington.

Administrative Offices.—The administrative offices of the School, 1331 H Street, consist of the offices of the Dean of the Medical Center, Medical Admissions, Research Administration, Public Relations, and the Medical Alumni Association.

Medical School Buildings.—In the buildings housing the School of Medicine, 1335 and 1337 H Street, there are lecture rooms, classrooms, students' rooms, and the following laboratories: anatomy, biochemistry, microbiology, pathology, pharmacology, and physiology. The laboratories are fully equipped to enable students to pursue adequately the laboratory courses and to acquire the technical skill necessary in modern clinical and investigative work.

Research Building.—The Research Building, 1339 H Street, houses special laboratories for graduate and staff research in the departments of Anatomy, Biochemistry, Microbiology, Pharmacology, and Physiology. Special facilities are provided for the study of radioactive compounds, for tissue-culture techniques, and for virologic procedures. Qualified students are invited to participate in certain aspects of the research program either on a volunteer basis or with the support of special Research Scholarships.

Teaching Aids.—This administrative unit of the School of Medicine directs the activities of the following service functions: Medical Illustration and Photography, Audio-visual Facilities (including television), and Xerox Duplication.

Medical Library.—The Medical Library, in well-equipped quarters on the first floor of 1339 H Street, N.W., contains 40,000 carefully selected volumes, including the new medical works and the principal medical journals.

Interlibrary loan service is maintained with other medical and scientific libraries.

The Medical Library is open from 7:30 a.m. to 10 p.m. each class day, Monday through Friday; from 8:30 a.m. to 5 p.m. Saturday; and from 12 noon to 5 p.m. Sunday.

A branch of the Medical Library is maintained in the University Hospital for the use of the resident physicians, interns, and students. It is open every day from 8:30 a.m. to 5 p.m. and 6 to 11 p.m.

CLINICAL FACILITIES

Students at the George Washington University School of Medicine receive clinical training at the University Hospital, at the University Clinic, and at affiliated hospitals.

The George Washington University Hospital.—This 550-bed hospital, staffed and directed by the Faculty of the School of Medicine, provides excellent clinical opportunities for the instruction of medical students. The Chief of Staff and Chiefs of Departments and Sections are responsible for the supervision of patient care. Under guidance, the individual student has direct responsibility to patients. Clinical conferences are held in which the history of patients, laboratory records, and the physical and pathological findings are presented and correlated.

The Meyer Pavilion, a new addition, has greatly enriched the facilities of the University Hospital by making available new monitored operating rooms; a clinical research unit; a radioisotope laboratory; and radiotherapy facilities, which include a linear accelerator.

The University Clinic.—The University Clinic is housed in a 10-story building adjacent to the University Hospital. Clinic facilities for each Hospital Service and cancer detection are available. Students are assigned in rotation by section for instruction in the University Clinic.

Children's Hospital.—This is one of the largest and best known hospitals for children in the United States. Medical students receive training and clinical experience in pediatrics on both clinic and inpatient services. Special lectures and clinical work in child psychiatry are given in Children's Hospital.

Columbia Hospital for Women.—This 150-bed hospital, situated only two blocks from the University Hospital, is utilized by medical students at George Washington University for clinical training in obstetrics and gynecology. Each year about 10,000 patients are admitted, and there are 11,000 outpatient visits. Almost 5,000 deliveries and 4,500 gynecological operations are performed annually. Columbia Hospital for Women is an affiliated hospital for residency training in Obstetrics and Gynecology in the George Washington University Medical Center Program.

District of Columbia General Hospital.—The District of Columbia General Hospital, one of the largest general hospitals in the country, is a teaching facility for students in the School of Medicine.

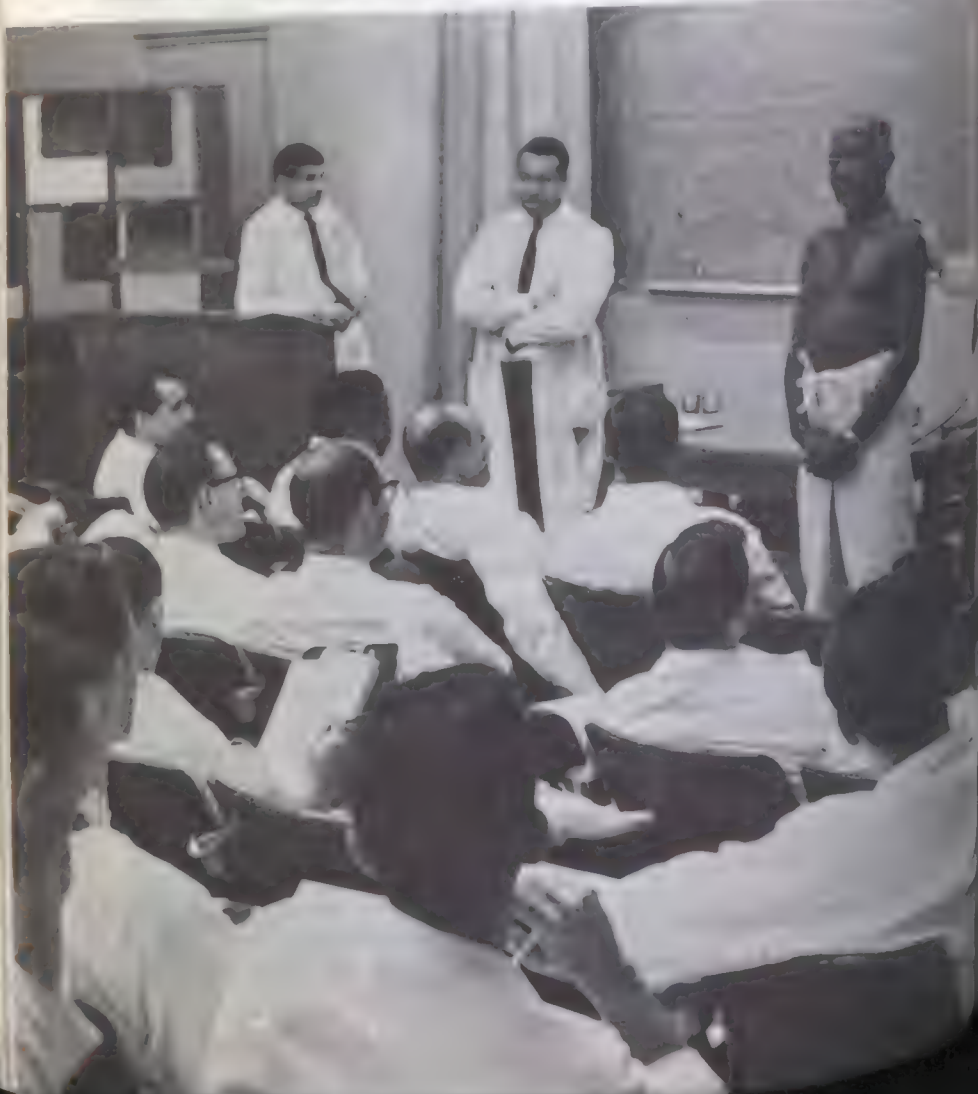
The hospital has a bed capacity of approximately 750. It is the principal facility for the care of the indigent sick of the community. Annually, the outpatient department has over 160,000 clinic visits; approximately 72,000 patients register in the emergency room, and 16,500 are admitted to the hospital. This is the largest emergency service in the District, and a great variety of acute medical and surgical problems are examined and treated.

Fairfax Hospital.—This new and already expanding 300-bed voluntary community teaching hospital serves a burgeoning suburban area and provides all clinical services including psychiatry. Each year over 14,500 patients are admitted, 3,500 babies delivered, 8,000 surgical operations performed, and 31,000 persons examined and treated in the Emergency Suite. Fairfax Hospital offers a rotating internship program, a School of Medical Technology, and clinical facilities for a School of Practical Nursing. Students of the School of Medi-

cine serve at this hospital in clinical clerkship, continuing care, and elective programs. Fairfax Hospital is an affiliated hospital for residency training in Medicine, Surgery, and Obstetrics and Gynecology in the George Washington University Medical Center Program.

St. Elizabeths Hospital.—St. Elizabeths Hospital, established by an act of Congress in 1855, is a federal psychiatric hospital administered under the Department of Health, Education, and Welfare. This hospital provides for the treatment, care, and general well-being of approximately 7,500 patients of whom 5,900 are resident. The facility includes a completely approved General Hospital to meet the needs for medical and surgical care and functions with a full-time staff within the hospital plus attending physicians in various specialties. The hospital maintains an up-to-date medical library.

Medical students of George Washington University utilize the facilities of St. Elizabeths for clinical psychiatric training. Opportunities for research are enhanced by a cooperative arrangement with the National Institute of Mental Health of the United States Public Health Service.



Veterans Administration Hospital.—This new 700-bed hospital, which replaces the Mt. Alto Veterans Administration Hospital and the Veterans Administration Outpatient Clinic, was opened in May, 1965.

In addition to the medical, surgical, psychiatric, neurological, tubercular, and physical medicine and rehabilitation services, there is a large outpatient program; an extensive medical research program; programs in open heart surgery, cobalt therapy, and renal dialysis; a metabolic program; and a specially designed Administrative Research Laboratory.

Washington Hospital Center.—Opened in 1958, this 829-bed private, voluntary institution serves the greater Washington area through a triad of activities: patient care, teaching, and research. The Center is the tenth busiest of more than 7,000 hospitals in the United States and the second busiest private hospital in terms of inpatient admissions. A very active emergency service cares for more than 40,000 patients a year, and the 36 clinics provide all major clinical service except pediatrics for about 100,000 outpatients yearly. In addition to an extensive approved internship and residency program, the Center offers organized instruction for nurses, laboratory and X-ray technicians, medical secretaries, and other health-related vocations.

GOVERNMENT MUSEUMS

The Armed Forces Institute of Pathology, on the grounds of Walter Reed Army Medical Center, affords unexcelled opportunity for study of conditions met in general medicine and surgery as well as those of special military significance. Its collection of anatomical and pathological specimens comprises material received from all areas of the world and is unequalled in this country. The Museum of Hygiene, the National Museum, the Smithsonian Institution, the Botanic Gardens, and the various collections of the Department of Agriculture all afford opportunity for study of materials of special interest in various areas of medicine and its allied sciences.

The Degree of Doctor of Medicine

ENTRANCE REQUIREMENTS

A MINIMUM OF 90 SEMESTER HOURS must have been earned in an accredited institution of higher learning. Credits earned in a professional school can be applied to the fulfillment of this minimum requirement only if they are acceptable by the applicant's college or university toward a Bachelor's degree in Arts or Science. A credit under the quarter system is two-thirds of a semester hour. It is advantageous to complete four full years of undergraduate work. Only exceptional students can be accepted upon completion of the minimal requirements.

The following courses must be completed with satisfactory achievement before the applicant can be certified for matriculation. All required science courses must include sufficient laboratory work to give assurance of familiarity with the experimental methods and techniques of the disciplines.

1. **Biology:** 8 semester hours, including 4 hours of laboratory. This may be either in general biology or zoology but may *not* include separately credited courses in botany.

2. **Chemistry:** 8 semester hours of general inorganic chemistry (which may include qualitative analysis), including 4 semester hours of laboratory; and 6 to 8 semester hours of organic chemistry, including laboratory.

3. **Physics:** 8 semester hours, including at least 2 semester hours of laboratory.

4. **English:** 6 semester hours in composition and literature. This may be the usual introductory college course or its equivalent.

While not required for admission, courses in embryology, histology, genetics, and mathematics are strongly recommended.

ADMISSION PROCEDURE

The applicant should give careful attention to the entrance requirements, supplying all the information asked for on the application and furnishing the School with all the required credentials. An applicant cannot be considered until the following are received:

1. A fully completed *Application for Admission*.

2. Official transcripts of record from the registrar of *each* college, university, professional school, or other medical school attended—including summer sessions. Inclusion of transferred credits on a transcript will *not* serve in place of the transcript from the school where the credits were earned. Applicants currently in attendance should request official transcripts of record to date and send *supplemental transcripts* as soon as courses are completed and grades are recorded.

3. Letters of recommendation from the applicant's premedical advisory committee or from the references given in the application.

4. The results of the Medical College Admission Test, sponsored by the Association of American Medical Colleges. (Information concerning this test may be obtained from premedical advisers or The Psychological Corporation, 304 East 45th Street, New York, N.Y. 10017.)

5. A check or money order made out to George Washington University in the amount of \$25 to cover the cost of evaluating credentials.

ADVANCED STANDING

The School of Medicine's curriculum is such that admission with advanced standing is ordinarily limited to the third year. Applicants for admission to the second year will be considered in exceptional circumstances. The applicant must:

1. Be or have been a regularly registered student in a school of medicine which is a member or an affiliate member of the Association of American Medical Colleges.

2. Be in good standing and eligible to continue in the school where he is currently enrolled, or eligible to re-enter that school if his education has been interrupted.

3. Have completed a course of study at least equivalent to that required for advancement to the year for which he is applying had he been a student in the George Washington University School of Medicine. For admission to the second year, he must have completed all work in anatomy, biochemistry,

microbiology, and physiology. For admission to the third year, he must have completed didactic courses in medicine, surgery, obstetrics and gynecology, pediatrics, and psychiatry.

4. Have the endorsement of the dean of his school of medicine or his authorized delegate.

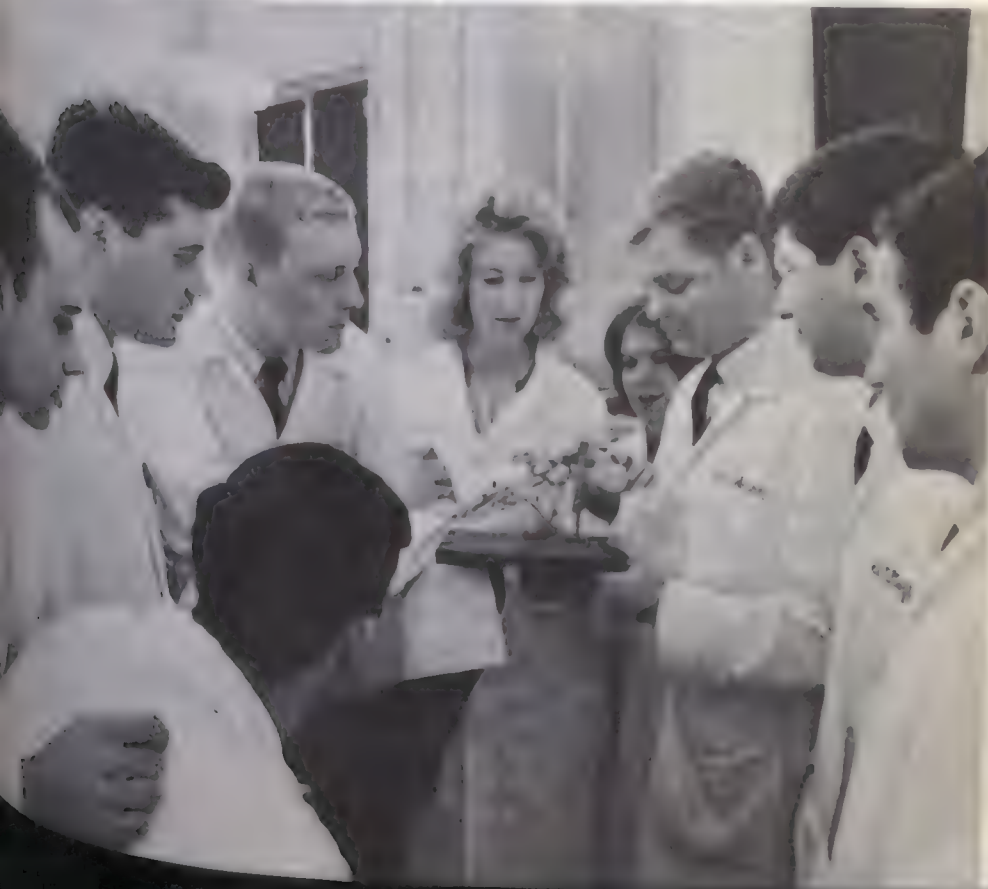
5. Pass each examination of Part I of the National Board Examinations if he is applying for admission to the third year. He should plan to take the examination in June of the year in which he wishes to enter.

The application procedures are otherwise the same as those given under the general instructions for admission.

SELECTION PROCEDURES

The Committee on Admissions reviews credentials as soon as they are complete. The Committee is guided in the selection of students by the applicant's academic ability, the results of the Medical College Admission Test, and personal qualifications as determined by letters of reference and personal interview. Applicants are interviewed regionally or locally on invitation by the Committee. The applicant who is invited to an interview should make every effort to keep the appointment or let the School know promptly if another arrangement must be made. The interviewer's report is an essential part of the applicant's record. The Committee on Admissions will not make a final recommendation until it has been received.

Each applicant is notified of the Committee's decision as soon as possible.



An applicant who is offered a place in a class is required, within two weeks, to notify the Office of Admissions of the School of Medicine of his intent to accept the place reserved for him. A deposit of \$100 must be remitted not later than March first prior to the opening of classes of the academic year for which he applied. This deposit will not be refunded after March first. It will be credited toward the tuition for the first semester.

Accompanying the offer of a place in class will be forms for a report on physical condition. This report must be completed and returned to the Office of Admissions of the School of Medicine by the student's physician within two months of receipt of the letter of acceptance.

All questions related to admissions, requests for applications, or the mailing of applications and credentials should be addressed to: Office of Admissions, George Washington University School of Medicine, 1331 H Street, N.W., Washington, D.C. 20005.

REGISTRATION

For the fall semester of the academic year 1970-71, registration will be conducted at the University Gymnasium, 2010 H Street, N.W., from 10 a.m. to 4 p.m., September 10. The time and place of registration for the spring semester, and the summer session of fourth-year clerkships, will be announced.

FEES AND FINANCIAL REGULATIONS

The following fees have been established for the academic year 1970-71. (See page 21 for projected tuition increases for 1971-74.)

| | |
|--|----------|
| Application fee | \$25.00 |
| Tuition fee, for the academic year | 2,000.00 |
| University Center fee, charged all students (except those granted "leave of absence" status) each semester | 37.50 |
| Late registration fee, for failure to register within the designated period | 15.00 |
| Reinstatement fee, for reinstatement after financial suspension for nonpayment of fees | 15.00 |
| Service fee, for deferred payment plan (see "Payment of Fees," page 21) | 5.00 |
| Continuous Registration fee, charged each student granted "leave of absence" status for each semester in the School of Medicine..... | 68.00 |
| University Center fee, charged each student granted "leave of absence" status, each semester | 3.50 |
| Graduation fee | 25.00 |
| Returned check fee, charged a student whose check is returned because of insufficient funds or improper drafting..... | 15.00 |

PAYMENT OF FEES

The annual fee of \$2,000 for the 1970-71 academic year is payable at the rate of \$1,000 on or before registration day for each semester. Students registered for the summer session of fourth-year clerkships will be on "continuous registration" without charge until the following fall semester.

All fees are payable at the Office of the Cashier of the University, except as some other arrangement may be announced. The Student Accounts Office has responsibility for creating, billing, and maintaining student accounts resulting from tuition and room and board charges. While tuition is due and payable in full as described above, a student may sign a contract with this Office at the time of registration permitting him to pay one-half of the semester fee at the time of registration and the remaining half on or before November 4, 1970, for the fall semester and March 17, 1971, for the spring semester. A service fee of \$5 is charged for the use of this deferred payment plan. The University will not obligate itself to notify the student, in advance, of the payment-due date for the second half of the semester charges. Students who fail to make any payment when due will be automatically suspended and may not attend classes until they have paid all accrued fees and the \$15 reinstatement fee and have been officially reinstated by the Student Accounts Office. Applications for reinstatement are to be made to the Student Accounts Office.

After a student has entered the course of instruction he is obligated for the tuition for the full semester. A student registered for the clerkships of the summer session is obligated for tuition due at the time of registration for the following fall semester, except that in the case of withdrawal or leave of absence a *pro rata* payment will become due immediately.

Acceptance by the University of a student's fees does not in any way obligate the School of Medicine to accept the student for any subsequent semester or summer session, and the right is reserved to require the withdrawal of any student whenever, in the interest of the student or the School, the Faculty deems it advisable to do so.

PROJECTED TUITION INCREASES FOR 1971-74

Academic year tuition increases have been estimated as follows: 1971-72, \$150; 1972-73, \$150; 1973-74, \$200. Every effort will be made to keep tuition increases within these limits. However, it is not possible to project future economic data with certainty, and circumstances may require an adjustment in these estimates.

COST OF TEXTBOOKS AND STUDENT EQUIPMENT

The minimum cost of necessary textbooks and student equipment (microscope, drawing materials, glass slides, clinical thermometer, stethoscope, hemocytometer, uniforms, etc.) is approximately as follows: first year, \$700; second year, \$400; third year, \$200; and fourth year, \$150. Microscopes must be provided by the student. Rentals are not available.

Because many parents may wish some option in meeting and financing all or part of the cost of a college education, the University offers educational loan plans through the Girard Trust Exchange Bank, Philadelphia, Pa.; Funds for

Education, Inc., Manchester, N.H.; and The Riggs National Bank, Washington, D.C.

Although similar in purpose, these plans vary somewhat in coverage and conditions. One-year and multiple-year plans are available. Insurance covering the life and health of the sponsor is provided through these plans.

Individuals over twenty-one years of age who are employed full-time are also eligible to apply. They may sponsor their own contracts, provided they meet the conditions specified by the plan for which they are applying.

Brochures and applications describing these plans are available in the Office of Student Financial Aid, George Washington University, Washington, D.C. 20006.

DEGREE REQUIREMENTS

DOCTOR OF MEDICINE

Every candidate for graduation with the degree of Doctor of Medicine must have satisfactorily completed the requirements of the School of Medicine as described under "Plan of Instruction" on pages 11-13, including not less than four academic years of study as a matriculated student in Medicine. He must have completed all required courses and passed satisfactorily all prescribed examinations.

HONORS

A candidate who has completed the four-year medical course with a quality-point index of 3.50 or above may be recommended by the Faculty for graduation "With Distinction."

COMBINED BACHELOR OF ARTS AND DOCTOR OF MEDICINE

In order to be recommended for the degree of Bachelor of Arts, the candidate must complete at least 94 semester hours of prescribed college work (at least 30 hours and one year of residence must be completed in Columbian College of Arts and Sciences) and the first year of the medical curriculum. Upon satisfactory completion of the fourth year of the medical curriculum the student becomes eligible for the degree of Doctor of Medicine.

COMBINED MASTER OF SCIENCE AND DOCTOR OF MEDICINE

Students in the School who wish to apply for the combined degrees of Master of Science and Doctor of Medicine must meet the requirements for admission to the Graduate School of Arts and Sciences. They must be recommended by the chairman of the department and by the deans of the Graduate School of Arts and Sciences and the Medical Center.

The Master of Science program consists of a minimum of 30 semester hours of credit. A maximum of 12 semester hours of credit for graduate-level courses completed as a part of the Doctor of Medicine degree (and not already applied toward the Bachelor's degree) will be allowed in fulfillment of the requirements of the Master of Science degree. The remaining 18 semester hours

of course work, which includes a thesis, must be in course work in the basic medical sciences normally required for a Master of Science degree in the Graduate School of Arts and Sciences.

MASTER OF SCIENCE AND DOCTOR OF PHILOSOPHY

The requirements for the degrees of Master of Science and Doctor of Philosophy are stated in the *Undergraduate and Graduate Catalogue* of the University, which is available at the Office of Admissions, George Washington University, Washington, D.C. 20006.

FINANCIAL AID

The following fellowships, scholarships, and loan funds are available to students in the School of Medicine. Unless otherwise specified, inquiries should be directed to the Office of the Dean of the Medical Center, George Washington University, 1331 H Street, N.W., Washington, D.C. 20005.

FELLOWSHIPS

Wilbur J. and Edith K. Carr Memorial Fellowship Fund (1965).—By bequest of Edith K. Carr, former Trustee of the University. The income from this fund provides fellowships in surgery, medicine, or medical research at the George Washington University Hospital.

Samuel Jordan Graham Fellowship in Surgery (1961).—By bequest, in memory of Judge and Mrs. Graham. The income from this fund, up to \$2,000, may be used to assist students who are pursuing postgraduate study or research, preferably in surgery, at the School of Medicine.

If no individual is conducting such work or deserving of the award, the income may be used to provide one or more scholarships (to cover tuition and other school expenses deemed appropriate) for students in the School of Medicine. Application should be filed with the Chairman of the Department of Surgery no later than March 1.

Robin Miller Research Fellowship (1953).—A \$3,000 fellowship established by bequest of Mrs. Robin Miller for the study of cardiovascular diseases.

Henry Rau Foundation Student Fellowship Grant (1967).—Awarded annually to a student in the School of Medicine for research in cancer and allied diseases at the George Washington University Clinic.

U.S. Public Health Service Training Grants.—Information concerning training grants in fields of the medical sciences is available at the Office of the Dean of the Medical Center.

SCHOLARSHIPS

Scholarships awarded to students in the School of Medicine are credited for the academic year unless otherwise specified. Each holder must carry a full schedule of academic work during the period for which the scholarship is awarded. Applicants should apply on prescribed forms which must be filed in the Office of the Dean of the Medical Center no later than March 15 preceding the academic year for which the scholarship is to be awarded.

Avalon Foundation Scholarships (1961).—Full and partial scholarships available to medical students upon application through the Office of the Dean of the Medical Center.

Anna Bartsch Hospital Intern Scholarship (1946).—A partial scholarship established by Dr. Anna Bartsch-Dunne as a memorial to her mother. Awarded to a woman intern in the University Hospital.

Anna Bartsch Medical Student Scholarship (1946).—A partial scholarship established by Dr. Anna Bartsch-Dunne as a memorial to her mother. Awarded to a woman in the School of Medicine "of outstanding scholarship, character, and promise, who intends to make the practice of medicine her life profession."

Jack I. Bender Scholarship (1967).—A partial scholarship established by the family of Jack I. Bender as a memorial to their father. Awarded annually to a student in the School of Medicine on the basis of academic performance and need.

Everett Lamont Bradley Scholarship (1954).—A partial scholarship, by bequest of Alice R. H. Bradley in memory of her son, for a student in the School of Medicine.

Dr. Edith Seville Coale Scholarships (1965).—Provided at the request of Dr. Coale for women in the School of Medicine. The scholarships are administered by the Zonta Club of Washington. Application should be made to the Office of the Dean of the Medical Center no later than December 1.

Joseph Collins Foundation Scholarships.—Available to medical school students upon application through the Office of the Dean of the Medical Center.

George Washington University Medical Alumni Scholarships (1965).—One \$1,000 scholarship awarded to a student in each of the four classes of the School of Medicine, on the basis of financial need and scholarship.

Health Professions Scholarship Program (1966).—Awarded by the School of Medicine to students who qualify under the provisions of Public Law 89-920. Inquiries should be directed to the Dean of the Medical Center.

Joan Luria Hines Scholarship (1968).—Established by friends, students, and faculty of the School of Medicine as a memorial to the wife of a medical student.

Robert Woods Johnson Scholarship Fund.—Available to medical students from New Jersey upon application to the Robert Woods Johnson Foundation.

Ki-Wives of Washington Scholarship Fund (1958).—A tuition scholarship available to a student or students in the School of Medicine.

Medical Research Scholarships and Traineeships.—For student participation in the research programs of the School of Medicine or special training in research methods. Research scholarships are ordinarily awarded for full-time activity during the summer months; research traineeships support part-time work during the academic year. Scholars are "matched" with members of the faculty in accordance with their mutual interests. Trainees are designated by the departments responsible for the programs. These programs have been sponsored by the National Institutes of Health, the National Foundation, the Council for Tobacco Research—U.S.A. In addition a number of research scholarships have been made available through the Washington Heart Association.

Paul Pearson Scholarship Fund (1940).—Partial scholarships available to graduate students who are taking courses in the Department of Pharmacology.

Chas. Pfizer Medical Scholarship Program (1962).—Established to financially assist a student in the School of Medicine.

School of Medicine Scholarship Fund (1948).—Established by gifts of various donors for tuition awards in the School of Medicine.

David Perry Steinman Memorial Scholarship Fund (1960).—Established by friends and classmates. Awarded annually to a sophomore in the School of Medicine on the basis of need and academic performance.

James J. Whisman Scholarship (1966).—A partial scholarship by bequest of James J. Whisman for needy and deserving students in the School of Medicine.

COLUMBIAN WOMEN SCHOLARSHIP FUNDS

The Columbian Women Scholarships are awarded to women students on the basis of financial need and scholastic attainment. Candidates must have completed a minimum of 15 hours at this University with a minimum *B* (3.0) average. A letter of application for these scholarships should be addressed to the Chairman, Columbian Women Scholarships, care of the Alumni Office, George Washington University, Washington, D.C. 20006, no later than May 15 for the fall semester, and January 1 for the spring semester. Scholarship aid is awarded from income of the following endowments:

Jessie Fant Evans Scholarship Fund (1967).—A \$10,000 fund for tuition aid, established by bequest of Jessie Fant Evans, former Trustee of the University.

Lewes D. and Myrtie H. Wilson Memorial Scholarship Fund (1926).—A fund of \$1,000 for tuition aid, established by Elizabeth Wilson as a memorial to her parents.

LOAN FUNDS

American Medical Association Medical Education Loan Guarantee Program (1960).—Available to medical school students (beyond the first semester of medicine).

Edith K. Carr Medical School Loan Fund (1962).—Established by Mrs. Carr for loans to students in the School of Medicine.

Health Professions Student Loan Program.—This fund is available to a full-time student pursuing a course of study leading to the degree of Doctor of Medicine. Interns, residents, students engaged in premedical or other professional training, students enrolled in programs of study other than those leading to the degree mentioned above, are *not* eligible for these loans.

A candidate must (1) be a citizen of the United States or have such immigration status and personal plans as to indicate that he intends to become a permanent resident of the United States, (2) be in need of the amount of the loan to be able to pursue his course of study, and (3) be in good standing with the School. Inquiries concerning deadlines and applications should be directed to the Dean of the Medical Center.

Joseph H. Himes Loan Fund (1956).—Available for loans to students in the School of Medicine.

W. K. Kellogg Medical School Loan Fund (1942).—Established by W. K. Kellogg Foundation in Battle Creek, Michigan, for loans to students in the School of Medicine.

Jessie B. Martin Loan Fund (1967).—Established by friends of Mrs. Jessie B. Martin, former Editor of Academic Publications at the University. An emergency fund for loans up to \$100, available to full-time degree students.

Pfizer Medical School Loan Fund (1953).—Established by Chas. Pfizer & Co., Inc., for loans to students in the School of Medicine.

School of Medicine Loan Fund (1951).—A fund established and supported by medical school students, available for loans to students in the School of Medicine.

Sutherland Medical School Loan Fund (1941).—Established by Rose L. Sutherland for loans to students in the School of Medicine.

W. E. Wrather Medical Student Loan Fund (1967).—Established by gift of Mrs. Olive D. Wrather in memory of her husband, for loans to students in the School of Medicine.

PRIZES

American Medical Women's Association, Inc., Prize.—A certificate awarded annually to each woman ranking academically in the upper 10 per cent of the graduation class. In addition a prize of \$100 is awarded to the woman with the highest scholastic ranking.

Samuel M. and Miriam S. Dodek Prize (1967).—Established in memory of Professor Bernhard Zondek, the eminent discoverer of the endocrinology of the human female reproductive cycle. Awarded annually to a member of the graduating class of the School of Medicine who has attained a commendable knowledge and understanding of the field of female endocrinology.

Allie S. Freed Prize (1957).—Awarded annually to a member of the graduating class in the School of Medicine who has demonstrated exceptional proficiency in the field of preventive medicine.

Walter Freeman Prize (1966).—Awarded annually to a student in the graduating class in the School of Medicine who submits the best essay based on original investigation.

Alec Horwitz Prize (1959).—A prize of \$100 awarded annually to a senior who has demonstrated exceptional proficiency in the field of surgery.

Oscar Benwood Hunter Prize (1952).—Established by The George Washington University Medical Society, now known as The George Washington University Medical Alumni Association. Awarded annually to a member of the graduating class of the School of Medicine who has demonstrated outstanding ability in pathology.

Jacobi Medical Society Prize (1962).—Established in memory of Dr. Abraham Jacobi, the founder of pediatrics practice in the United States. Awarded annually to a member of the graduating class of the School of Medicine who has demonstrated outstanding ability in pediatrics.

Howard Kane-A. F. A. King Obstetrical Society Prize (1937).—Established in memory of Dr. Howard Kane and Dr. A. F. A. King, who served as Professors in the School of Medicine. Awarded annually to a member of the graduating class of the School of Medicine who has demonstrated outstanding ability in obstetrics and gynecology.

Lange Medical Publications Prize.—Awarded annually to two members of the graduating class who are considered outstanding by their classmates. The prize consists of the graduate's choice of four books published by Lange Medical Publications.

Huron W. Lawson Prize (1957).—A prize of \$100 established by Mrs. Lawson in memory of her husband, who was a distinguished member of the

Medical Staff of the University, presented annually to a member of the graduating class who has demonstrated exceptional proficiency in the field of obstetrics and gynecology.

Benjamin Manchester Prize (1966).—Established by a grateful patient in honor of Doctor Benjamin Manchester, Clinical Professor of Medicine. Awarded annually to a member of the graduating class in the School of Medicine who has an outstanding record and shows promise of real humanitarianism in the practice of medicine.

C.V. Mosby Book Prize.—Awarded annually to four members of the graduating class who are considered outstanding by their classmates. The prize consists of the graduate's choice of a book published by C.V. Mosby Company.

Julius S. Neviasser Prize in Orthopaedic Surgery (1956).—A prize of \$100 awarded annually to the senior in the School of Medicine who scores the highest grade in a written examination and clinical aspects of orthopaedic surgery.

John Ordronaux Prize (1907).—By bequest, \$150 awarded annually to the member of the graduating class of the School of Medicine who has the highest scholastic standing.

Phi Delta Epsilon Prize (1965).—Awarded annually to a student in the School of Medicine for scholarship, leadership, and service, and who is a member of Phi Delta Epsilon.

Roche Prize.—An Omega watch and a scroll awarded annually to the member of the graduating class who best exemplifies the ideals of the modern American physician. The winner is chosen by vote of the graduating class.

William G. Schafhirt Prize (1966).—By bequest, \$200 awarded annually to the senior student in the School of Medicine for the best original essay or thesis on some medical subject of current public interest.

Upjohn Achievement Prize.—A prize of \$200 and an inscribed plaque awarded annually to a member of the graduating class selected by his or her classmates on the basis of outstanding scholastic and personal achievement.

REGULATIONS

ATTENDANCE

A student is not permitted to attend classes until registration has been completed and fees due have been paid. Regular attendance is required.

GRADES

A—excellent; B—good; C—satisfactory; D—passing; F—failure; I—incomplete; CR—credit.

The grade I (incomplete) is a temporary grade. It indicates that the required work of the course has not been completed for reasons acceptable to the Dean. An "incomplete" must be removed by arrangement with the department concerned before the student may advance to the work of the following year. The appropriate permanent grade is thereupon assigned.

The grade CR (credit) is assigned in those courses in which attendance is required but qualitative evaluation is not made.

A student receiving a grade of F in any subject may not advance to the work of the following year until he has complied with such recommendations of the Committee on Scholarship as are approved by the Executive Faculty.

QUALITY-POINT INDEX

For purposes of quantitative evaluation of academic performance a "quality-point" index is computed on the basis of *A*, four points; *B*, three points; *C*, two points; *D*, one point; and *F*, zero points.

PROBATION

Any student in the School of Medicine not maintaining a 2.00 quality-point index at the beginning of each school year will be placed on academic probation. No student will be allowed to continue in the School of Medicine if he exceeds three semesters of probation.

ACADEMIC DISMISSAL

A student whose cumulative quality-point index falls below 1.50 or whose academic achievement is otherwise considered unsatisfactory will be recommended to the Committee on Scholarship for dismissal from the School of Medicine.

EXAMINATIONS

Examinations, which may be written, oral, or practical, will be held during and at the end of each semester.

All students in the School of Medicine are required to take Part I and Part II of the National Board of Medical Examiners. A student failing to attain a passing average for the Part I examination must repeat the examination in September of the same year. Such a student shall be registered for the fifth semester in the School of Medicine on academic probation.

ACADEMIC DISHONESTY

Academic dishonesty on the part of any student will result in a disciplinary grade of *F* for the course involved and also may, upon the recommendation of the Dean's Council, result in his suspension from the University for a stated period, at the end of which time he may petition for readmission. The disciplinary grade of "Failure—Academic Dishonesty" will be recorded for the course involved, and this grade will be employed in the computation of the quality-point index. A student so suspended shall be withdrawn from all other courses except those in which all work has been completed.

GRADUATION

Application for Graduation.—Application for graduation must be filed in the Office of the Dean and the fee must be paid at the time of registration for the last semester of the senior year.

Presence at Graduation.—A candidate is required to be present at the graduation exercises unless written application for graduation *in absentia* is approved by the Dean.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

RECENTLY ESTABLISHED REGULATIONS

An Appendix (pages 149-50) contains regulations recently approved by the University's Board of Trustees.

UNIVERSITY POLICY ON THE RELEASE OF STUDENT INFORMATION

In general, the policy of the University is one of attempting to keep the student's record confidential and out of the hands of those who would use it for other than legitimate reasons. At the same time, the policy must be flexible enough not to hinder the student, the University, or the community in their legitimate endeavors.

No information concerning a student will be released, except as noted below, unless required by court order or subpoena, or requested in writing by the student:

1. Information which is of public record, such as whether or not the student is currently enrolled; dates of attendance; whether or not he received a degree; current address and telephone number; the college or school in which he is enrolled.
2. The issuance of formal transcripts of record to recognized institutions of higher learning; the certification of academic achievement to the various recognized professional associations (law, medicine, engineering, education, etc.); and the inspection of records, under appropriate supervision, by properly validated representatives of government investigative agencies.

HEALTH SERVICES

The Health Services Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open Monday through Friday, from 9 a.m. to 10 p.m., with physician in attendance. On Saturdays, a physician is available from 9 a.m. until 12 noon. For night and weekend emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges also include hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-

month period—the necessity to be determined by the Director of Health Services*. These privileges do not include coverage for maternity or other conditions arising from a pregnancy. All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses, orthopaedic examinations and application of cast or other appliance, laboratory and X-ray work, and surgical operations, must be paid by the student.

These medical benefits apply only to illness or disability incurred while currently enrolled in the University. They do not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student may, if he so desires, engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Services is empowered to limit or deny the medical benefits when, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination; (5) the hospitalization privilege provided by the University is not available to those students covered by any other type of hospitalization.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education.

HEALTH AND ACCIDENT INSURANCE

In addition to the above services, the Health Services Staff has arranged for Health and Accident Insurance, on an elective basis, for all full-time students. Arrangements for insurance coverage are the responsibility of the student, and must be made during the fall or spring registration period. Payment must be made at the time the student subscribes to the policy.

Coverage is effective, whether at the University, at home, or elsewhere, for the entire six-month period of the policy—September through February for those subscribing in the fall, March through August for those subscribing in the spring.

This policy contract is between the individual student and the insurance carrier and is accepted at any hospital or emergency room that accepts this type of medical work. Details of the policy are contained in a folder available at the Health Services Office.

PHYSICAL EXAMINATIONS

All first-year students are required to have a comprehensive physical examination prior to admission to the School of Medicine. The students are informed of significant findings and advised regarding such measures as will tend to help them maintain a high standard of health.

* See rule 5 for exception.

In addition medical students benefit from the complete Tuberculosis Case Finding Program which the School maintains. Under this program all students receive tuberculin tests, X-ray examinations, and such special attention from chest specialists as is necessary to reduce to a minimum the dangers from tuberculosis. Students are immunized against those diseases for which proven prophylaxis exists.

RESIDENCE HALLS

Complete information concerning the University's residence halls is available from the Housing Administrator, George Washington University, Washington, D.C. 20006.

Information concerning off-campus housing may be obtained at the Office of the Dean of the Medical Center. Reservations for private housing must be made by students.

HONOR SOCIETIES

Alpha Omega Alpha.—National Honor Medical Society. Members of the Junior and Senior classes meeting the qualifications specified by the constitution of the Society are eligible for election to membership.

William Beaumont Medical Society.—Medical students showing unusual ability for medical writing and research are elected by the active members of this society.

Howard Kane-A. F. A. King Obstetrical Society.—The fifteen students in the third- and fourth-year classes who maintain the highest grades in their work in obstetrics are eligible for membership.

Smith-Reed-Russell Society.—Students of the third and fourth years who maintain a quality-point index of 3.30 or higher are eligible for membership.

UNIVERSITY CENTER

The term University Center encompasses a building, an organization, and a program. The building is the University's center for community life. It is the physical instrument for implementation of the programs and objectives of the organization.

The organization, composed of students, faculty, administrators, and alumni, provides an informal education medium for individual and group activities adapted to the leisure-time interests and needs of the college community. It also provides training for those directly involved in management and programming for the Center.

The primary purpose of the George Washington University Center is the continuing development of a broad cultural, intellectual, social, and recreational program. Its secondary purpose is the provision of its various services and facilities to the campus community for the development of community life.

The Center houses a wide range of facilities to serve the needs of the campus, including dining rooms and a rathskeller, a bookstore, lounges and study areas, a theater, bowling lanes and a billiard room, a faculty club, student organization offices and workrooms, meeting and conference rooms, an information center, music listening rooms, social areas, shower and dressing rooms, lockers, and parking accommodations.

RECREATION

The Nation's capital provides abundant recreational resources, a large number of which are available at little or no cost. There are numerous art galleries, museums, concert halls, theaters, swimming pools, parks, and places of great historic interest. Social activities are provided by student organizations of the University, the School of Medicine, and University-sponsored programs such as intramural sports, concerts, recitals, and dramatic productions. Religious faiths are represented in Washington by one or more churches. Washington is one of the most colorful cultural and scientific centers of the world.

The University Hospital and Clinic

THE MEDICAL STAFF CONSISTS of the following groups: Emeritus, Honorary, University, and Courtesy.

Physicians on the Faculty and Staff of Instruction of the School of Medicine are eligible for appointments to the University Hospital Staff. The Administrator of the Hospital and Clinic and the Director of Nursing are ex officio members.

OFFICE OF THE ASSOCIATE DEAN FOR CLINICAL AFFAIRS

J.J. Feffer, B.A., M.D., *Associate Dean*
 A.E. Parrish, M.D., *Director of Clinical Research*
 Bertel Nelson, B.A., M.D., *Secretary of the Medical Staff*
 C.T. Klopp, B.A., M.D., *Medical Director, University Clinic*

DEPARTMENTS AND DIVISIONS

Department of Anesthesiology: C.S. Coakley, M.D., *Chairman*; B.S. Epstein, B.A., M.D., *Associate Chairman*
 Department of Clinical Engineering: C.A. Caceres, B.S., M.D., *Chairman*
 Department of Dermatology: R.S. Higdon, B.S., M.D., *Chairman*
 Department of Medicine: W.N. Jensen, B.A., M.D., *Chairman*; G.A. Kelser, Jr., B.S., M.D., *Associate Chairman*
 Division of Allergy: Halla Brown, M.D., *Director*
 Division of Cardiology: G.A. Kelser, Jr., B.S., M.D., *Director*
 Division of Gastroenterology: T.S. Sappington, B.A., M.D., *Director*
 Division of General Medicine: _____
 Division of Hematology: J.J. Rheingold, B.A., M.D., *Director*
 Division of Infectious Diseases: M.J. Romansky, B.A., M.D., *Director*
 Division of Internal Medicine: Mary Watt, M.D., *Director*
 Division of Metabolic and Endocrine Diseases: L.K. Alpert, B.S., M.D., *Director*
 Division of Pulmonary Diseases: D.J. Massaro, B.A., M.D., *Director*
 Division of Renal Diseases: A.E. Parrish, M.D., *Director*
 Division of Rheumatology and Rehabilitation Medicine: T.M. Brown, B.A., M.D., *Director*
 Department of Neurology: Sean O'Reilly, M.B., M.D., *Chairman*
 Electroencephalographic Laboratory: Harold Stevens, Ph.D., M.D., *Director*

Department of Neurological Surgery: H.V. Rizzoli, M.D., *Acting Chairman*
 Department of Obstetrics and Gynecology: J.G. Sites, M.D., *Chairman*
 Department of Ophthalmology: M.G. Alper, B.A., M.D., *Acting Chairman*
 Department of Orthopaedic Surgery: J.P. Adams, B.S., M.D., *Chairman*; H.L. Feller, B.A., M.D., *Associate Chairman*
 Department of Pathology and Clinical Pathology: T.M. Peery, B.A., M.D., D.M.S., *Chairman*
 Department of Pediatrics: F.P. Heald, B.A., M.D., *Chairman*; A.M. Margileth, B.A., B.S., M.D., *Associate Chairman*
 Department of Physical Medicine and Rehabilitation: John Watt, Jr., B.S., M.D., *Acting Chairman*
 Department of Psychiatry, Leon Yochelson, B.A., M.D., *Chairman*
 Department of Radiology: W.W. Stanbro, M.D., *Chairman*
 Department of Surgery: Brian Blades, B.A., M.D., *Chairman*; P.C. Adkins, B.A., M.D., *Associate Chairman*
 Division of General Surgery: Brian Blades, B.A., M.D., *Chairman*
 Division of Oral Surgery: S.G. Mead, D.D.S., *Director*
 Division of Otorhinolaryngology: J.J. McFarland, Jr., B.S., M.D., *Chairman*
 Division of Plastic Surgery: G.S. Letterman, B.S., M.D., *Director*
 Division of Traumatology: D.S. Wenger, M.S., M.D., *Director*
 Division of Urology: L.R. Culbertson, B.S., M.D., *Chairman*

ADMINISTRATIVE STAFF

OFFICE OF THE ADMINISTRATOR

V.F. Ludewig, B.S., *Administrator*
 F.A. Menk, *Associate Administrator, University Hospital*
 F.P. Ferraraccio, B.S., M.B.A., *Associate Administrator, University Clinic*
 K.M. Brent, B.S., M.H.A., *Assistant Administrator, University Hospital*
 LeRoy Norem, *Assistant Administrator, University Hospital*
 Donald Wise, B.S., *Assistant Administrator, University Hospital*
 P.D. Torrence, B.A., M.B.A., *Assistant Administrator, University Clinic*
 R.F. Whitehair, *Evening Administrator, University Hospital*
 Irene Menassa, R.N., B.S., M.A., *Assistant Administrator; Director of Nursing*
 Irma Kraft, R.N., M.A., *Associate Director of Nursing*
 Louise O'Neal, R.N., B.A., *Assistant Director of Nursing*
 Rainer Volk, *Comptroller, University Hospital*
 F.D. Cooper, M.S., *Chief Pharmacist*

GENERAL INFORMATION

The George Washington University Hospital functions as an active teaching facility for students of the School of Medicine and for a large House Staff. It is fully approved by the American Medical Association, the American Hospital Association, the American College of Physicians, and the American College of Surgeons, through the Joint Commission for the Accreditation of Hospitals. The University Hospital is located on Pennsylvania Avenue at Washington Circle, six blocks from the White House, near the downtown area of metro-

politan Washington. Annual admissions of inpatients number approximately 20,000; visits of ambulatory patients to the University Clinic are approximately 40,000 a year.

The Eugene Meyer Pavilion is a new and attractive six-floor addition to the University Hospital that is now fully functional. In addition to one hundred new beds, the Eugene Meyer Pavilion contains a new and expanded operating suite specially serviced by modern electronic monitoring devices; an In- and Out-surgical Service which has its own reception accommodations, special operating rooms, and recovery area; an entire floor set aside for clinical research activities including a series of superbly equipped special laboratories and eighteen specially designated patient beds; a six-million volt linear accelerator that is especially useful to facilitate radiation therapy; a well-equipped and very active radioisotope laboratory devoted to a wide variety of diagnostic and therapeutic procedures; specially designed teaching and conference areas which have telephonic-dictating, tape-recording, and visual-projection devices available.

Remodeling, updating, and extensive modification of the original Hospital building is now complete. The enlarged and renovated University Hospital is centrally air-conditioned throughout; has a total of 550 beds for inpatient use, and includes a new delivery suite; specially designed and equipped intensive care and coronary care units; enlarged X-ray, pathology, and physical medicine departments; as well as all of the latest diagnostic and supporting facilities. The University Hospital has been designed to make available to patients the highest quality of diagnostic and therapeutic services, as well as to provide a broad spectrum of interrelated teaching and research activities.

The Council on Medical Education of the American Medical Association has approved the University Hospital for straight internship in medicine, pathology, and surgery, and, together with the various specialty boards, for residency training in anesthesiology, cardiac diseases, internal medicine, neurological surgery, obstetrics-gynecology, ophthalmology, orthopaedic surgery, pathology, physical medicine and rehabilitation, plastic surgery, psychiatry, radiology, surgery, thoracic surgery, and urology.

Junior and senior students of the School of Medicine are assigned to the University Hospital and Clinic to serve as clinical clerks in the various specialty departments, in the Emergency Room, and in different elective programs. Regular conferences for students, house staff, and attending physicians are held.

Other major teaching activities include a residency program in hospital administration; close affiliation with the University's graduate program in hospital administration; programs in medical technology leading to the degree of Bachelor of Science in Medical Technology as well as to a certificate; and an affiliation for the training of practical nurses.

The Hospital has an excellent branch medical library. The House Staff can also arrange to use libraries of the School of Medicine and the University and outstanding city and federal libraries and record collections.

INTERNSHIP, RESIDENCY, AND FELLOWSHIP PROGRAMS

Internships.—Straight internships are available in medicine, pathology, and surgery.

Residencies.—Approved residencies are offered for a total of 138 positions in the fields of anesthesiology, cardiac diseases, internal medicine and most of

its subspecialties, neurological surgery, obstetrics-gynecology, ophthalmology, orthopaedic surgery, pathology, physical medicine and rehabilitation, plastic surgery, psychiatry, roentgenology, surgery, thoracic surgery, and urology. Residency programs are from one to four years in duration, depending upon the service. Residents and fellows in the University Hospital programs also receive appointments as members of the faculty of the School of Medicine with active teaching responsibilities.

Fellowships.—Fellowships, through the School of Medicine, of one or two years are available in allergy, anesthesiology, cardiology, chest diseases, gastroenterology, hematology, infectious diseases, metabolic diseases, oncology, pediatrics, physical medicine and rehabilitation, renal diseases, rheumatic diseases, surgery, thoracic surgery, and University Clinic.

All appointments are for one year with the privilege of applying for continuation on the House Staff. In several of the intern, residency, and fellowship programs, excellent affiliations are maintained with local and governmental hospitals. Inquiries and applications for internships and residencies should be addressed to the Chairman of the Department or to the Associate Dean of the Medical Center, for Clinical Affairs; George Washington University Hospital, 901 23d Street, N.W., Washington, D.C. 20037.

Information relative to fellowships may be obtained from the Chief of the Department concerned or from the Associate Dean of the Medical Center, for Clinical Affairs, in care of the Hospital.

MEDICAL TECHNOLOGY COURSE

This course is open to candidates for the degree of Bachelor of Science in Medical Technology, offered by Columbian College of Arts and Sciences, and to the other applicants meeting the requirements of the Registry of Medical Technologists of the American Society of Clinical Pathologists. These requirements, fully satisfied by the Columbian College program, consist of 3 years (90 semester or 135 quarter hours) of college work in any college or university approved by the recognized regional accrediting agency, including certain specific courses in the science field. The specific science requirements are as follows: *Chemistry*—a minimum of 4 semesters or 6 quarters (16 semester hours or 24 quarter hours) of studies acceptable toward a major in chemistry and including lecture and laboratory; *Biological Sciences*—a minimum of 4 semesters or 6 quarters (16 semester hours or 24 quarter hours) of studies acceptable toward a major in biological science and including lecture and laboratory; *Mathematics*—a minimum of 3 semester hours or 4 quarter hours of college mathematics.

For students enrolled in Columbian College of Arts and Sciences as candidates for the degree of Bachelor of Science in Medical Technology, the Medical Technology Course constitutes the final (fourth) year of qualification for the degree.

In the case of those who have taken their prerequisite work in some other college or university, satisfactory completion of the Medical Technology Course will not satisfy the requirements for the degree from Columbian College.

The Medical Technology Course consists of 12 months of didactic and practical work in clinical laboratory procedures, offered by the Department of

Pathology in the University Hospital. Students ordinarily begin this course with the fall semester, but under exceptional circumstances may begin at other times.

A limited number of scholarships are provided by the University Hospital for students enrolled in the fourth year of the degree program. All students in this fourth year must provide themselves with uniforms; laundry of uniforms is provided by the University Hospital. A cash allowance of \$65 a month is granted during the last 6 months of the fourth year in training.

Upon satisfactory completion of the course a certificate is awarded, and the candidate is eligible for the national certifying examination given by the Registry of Medical Technologists.

Enrollment in the Medical Technology Course is strictly limited so that personal instruction can be given. Acceptance to the Columbian College degree program does not necessarily assure acceptance into the Hospital program. Inquiry about this course should be sent directly to the Department of Pathology, George Washington University Hospital, Washington, D.C. 20037.

Alumni and Allied Associations

THE GENERAL ALUMNI ASSOCIATION

THE OBJECTIVES OF THIS ASSOCIATION are to unite graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and to promote the general welfare of the University.



Eligible members are those who have matriculated in any school of the University and left the University in good standing, or any person who is or has been a member of the teaching, research, or administrative staff of the University, or of the Board of Trustees of the University. Active members are those eligible members who are current contributors to (dues or otherwise) or life members of the George Washington University General Alumni Association, the Alumni Association of any school of the University, or contributors to the Annual Support Program.

The Alumni Office is in Bacon Hall, 2000 H Street, N.W., Washington, D.C. 20006. All alumni are urged to keep the Alumni Office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

THE GEORGE WASHINGTON UNIVERSITY MEDICAL ALUMNI ASSOCIATION

The George Washington University Medical Alumni Association, incorporated in 1959, continues the organization previously known as the George Washington University Medical Society.

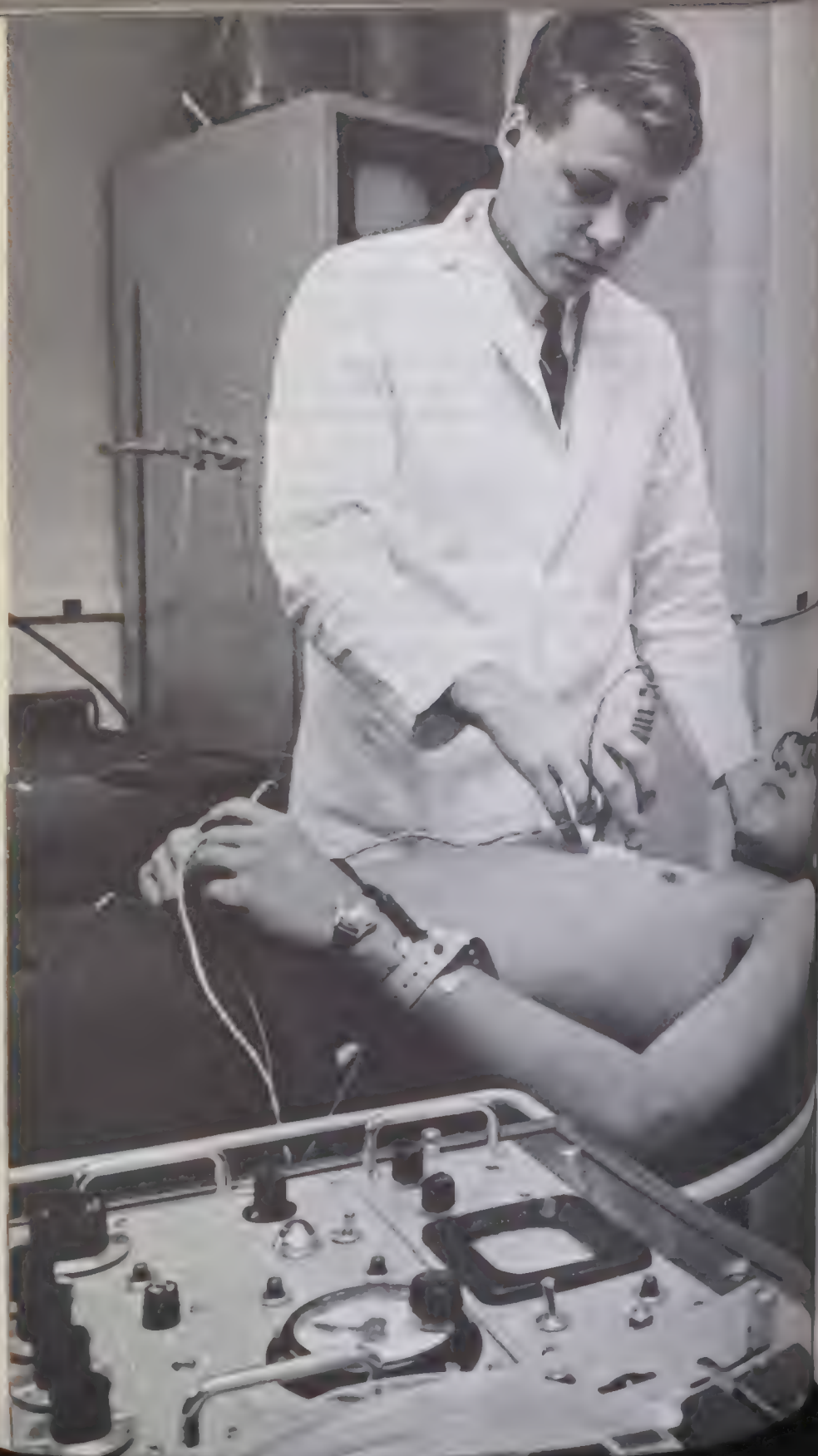
The stated purposes of the Association are as follows: "This shall be a non-profit organization international in scope, whose objectives shall be to provide constructive services for the alumni of the George Washington University School of Medicine, for furthering the art and science of medicine, research, and for the promotion of the welfare of the George Washington University School of Medicine, its students, the George Washington University Hospital and its trainees."

Active membership in the Association consists of: all graduates of the School of Medicine; current members and, on application, past members of the teaching staff of the School of Medicine who hold doctoral degrees; Doctors of Medicine who have had one or more years of postgraduate training in the George Washington University Hospital. Junior membership consists of all members of the student body of the School of Medicine during the time they are students.

The Medical Alumni Association maintains an office in the School of Medicine at 1331 H Street, N.W., Washington, D.C.

OFFICERS FOR 1969-70

- President*—Maurice T. Gromet, B.A. 1931, M.D. 1934
- President Elect*—Jerome W. Canter, M.D. 1955
- First Vice President*—Marvin P. Footer, B.A. 1938, M.D. 1942
- Second Vice President*—Thomas A. Wilson, B.A. 1942, M.D. 1944
- Secretary*—Donald H. Glew, Jr., M.D. 1948
- Treasurer*—John F. Mermel, M.D. 1960
- Executive Council:*
 - Jerome Epstein, M.A. 1948, M.D. 1953
 - Jack B. Kleh, B.A. 1942, M.D. 1944
 - Richard I. Kilstein, B.A. 1931, M.D. 1934
 - Angelo May, M.D. 1937
 - Carolyn Pincock, B.A. 1931, M.D. 1934
 - George Speck, M.D. 1941
 - Allan Zellis, M.D. 1941



COURSES OF INSTRUCTION

ON THE FOLLOWING PAGES OF THIS CATALOGUE are listed the courses of instruction offered by the School of Medicine. The School of Medicine serves other divisions of the University by making available to nonmedical students certain undergraduate and graduate courses in the following departments: Anatomy, Biochemistry, Epidemiology and Environmental Health, Microbiology, Pathology, Pharmacology, and Physiology. The courses listed are subject to some slight change. The University reserves the right to withdraw any course announced.

STAFF OF INSTRUCTION

The Staff of Instruction listed under each Department is for the academic year 1969-70.

EXPLANATION OF COURSE NUMBERS AND SYMBOLS

A number in parentheses after the name of the course indicates number of semester hours of credit which may be earned.

Courses numbered from 101 to 200 are for third- and fourth-year Columbian College of Arts and Sciences students.

Courses in the basic science departments are numbered from 201 to 400. They are for medical students and graduate students in the Arts and Sciences.

Courses in the clinical departments are numbered from 301 to 400. They are limited to medical students.

Anatomy

Professors I.R. Telford (Chairman), Paul Calabrisi, C.M. Goss (Visiting—Medical History), F.D. Allan, T.N. Johnson
Professorial Lecturer J.L. Angel
Associate Professor J.B. Christensen
Assistant Professorial Lecturers J.A. Di Paolo, L.E. Church
Assistant Professors E.N. Albert, Marilyn Koering
Assistant Clinical Professor R.N. Brown
Assistant Professorial Lecturers R.G. Clark, Joan Blanchette

***201 Anatomy (12)**

All anatomical disciplines are integrated: regional gross dissection, histology, neuroanatomy, embryology. (Fall) Staff

202 Gross Anatomy (6)

For graduate students. Regional dissections of adult cadaver supplemented with lectures and X-rays. Laboratory fee, \$30. (Fall) Calabrisi and Staff

203 Human Embryology (1)

For graduate students. Origin and development of human body; emphasis on value of embryology in interpreting anatomical anomalies. (Fall) Allan

204 Neuroanatomy (2)

For graduate students. Gross and microscopic anatomy of central nervous system and special senses. Laboratory fee, \$13. (Fall) Johnson and Staff

205 Microscopic Anatomy (3)

For graduate students. Microscopic structure of cells, tissues, and organs of the human body. Laboratory fee, \$13. (Fall) Telford and Staff

221-22 Seminar (1-1)

For graduate students. Research reports and discussions of special topics by staff and graduate students. Medical students encouraged to attend. (Academic year) Johnson and Staff

249 Introduction to Anatomical Research (1)

For graduate students. Major research techniques as applied to biological materials in the various anatomical disciplines. (Fall) Telford and Staff

252 Physical Anthropology (1)

Variations in man and factors affecting him, human evolution and racial differences, anatomy and culture of ancient man. (Spring) Angel

254 Fetal Anatomy (2)

Dissection of early and late human fetus. Comparison of fetal and adult structures. 20 students. Laboratory fee for nonmedical students, \$10. (Spring) Allan

256 Human Genetics (1)

General principles of genetics, new cytogenetics techniques, aneuploidy in man and its significance, biochemical aspects of heredity, genetic counseling. (Spring) C.B. Jacobson

260 Electron Microscopy in Cellular Biology—Lecture (1)

Anatomy 260 may be taken without 261. (Spring) Blanchette

261 Electron Microscopy in Cellular Biology—Laboratory (2)

Accompanies Anatomy 260. Prerequisite or concurrent registration Anatomy 260. 12 students. Laboratory fee for nonmedical students, \$10. (Spring) Blanchette

262 Gross Anatomy of Upper and Lower Extremities (2)

Detailed dissection, supplemented by X-ray anatomy; discussions, assigned reading. 24 students. Laboratory fee for nonmedical students, \$10. (Spring) Calabrisi

* Required for medical students.

- 264 Gross Anatomy of Head and Neck (2)** Christensen
Detailed dissection, supplemented by X-ray anatomy; discussions, assigned reading. 24 students. Laboratory fee for nonmedical students, \$10. (Spring)
- 266 Gross Anatomy of Thorax and Abdomen (2)** Christensen
Detailed dissection, supplemented by X-ray anatomy; discussions, assigned reading. 24 students. Laboratory fee for nonmedical students, \$10. (Spring)
- 268 Gross Anatomy of Pelvis, Perineum, and Lower Extremity (2)** Calabrisi
Detailed dissection, supplemented by X-ray anatomy; discussions, assigned reading. 24 students. Laboratory fee for nonmedical students, \$10. (Spring)
- 270 Dissection of the Human Brain (1)** Johnson
Dissection of major pathways and nuclei of the brain with consideration of ventricular system; conferences and assigned reading. 20 students. Laboratory fee for nonmedical students, \$10. (Spring)
- 272 Autonomic Nervous System (1)** Allan
Development, microscopic and gross anatomy, function of central and peripheral components of autonomic nervous system. (Spring)
- 274 Tissues of the Body (1)** Telford
Basic concepts in anatomy, with emphasis on primary tissues of the body—their histogenesis, growth, functions, regenerative capacities, aging, death. (Spring)
- 278 History of Anatomy and Surgery (1)** Goss
Lectures and discussions related particularly to the lives and times of outstanding contributors to the advancement of the science of anatomy and surgery. (Spring)
- 280 Regional Anatomy (5)** Calabrisi, Christensen
Advanced dissection of any region of the body. 8 seniors; 4-week elective periods. School of Medicine (Spring)
- 281 Neonatal Anatomy (5)** Allan
Detailed dissection of newborn or late fetus. 4 seniors; 4-week elective periods. School of Medicine (Spring)
- 282 Advanced Neuroanatomy (5)** Johnson
Detailed dissection of human adult brain. 5 seniors; 4-week elective periods. School of Medicine (Spring)
- 283 Introduction to Neuroanatomical Research (5)** Johnson
Techniques and principles of research in neuroanatomy. 5 seniors; 4-week elective periods. School of Medicine (Spring)
- 284 Experimental Teratology (10)** Telford
Congenital abnormalities in animals induced by various experimental methods. 2 seniors; 8-week elective periods. School of Medicine (Spring)

286 Microangiography and Microradiography (5)

Christensen

Intimate vasculature of selected organs by injection and radiography
2 seniors; 4-week elective periods. School of Medicine (Spring)**287 Human Cytogenetics (5)**

C.B. Jacobson

Chromosomal research on reproductive anomalies, congenital malformations, mutagenic assay. Tissue culture, photomicrography, karyotypic analysis, genetic counseling. 2 seniors; 4-week elective periods. Univ. Hosp. (Spring)

295 Research (arr.)

Content differs each time course is offered; may be repeated once for credit. Fee to be arranged. (Fall and spring)

299-300 Thesis Research (3-3)

(Academic year—as arranged)

398 Advanced Reading and Research (arr.)

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged)

399 Dissertation Research (arr.)

Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged)

Anesthesiology*Professors* C.S. Coakley (*Chairman*), Seymour Alpert*Clinical Professor* D.H. Stubbs*Associate Professors* Paula Kaiser, Patricia Russell, B.S. Epstein (*Associate**Chairman*), Marie-Louise Levy, Arthur Peschin*Assistant Professors* G.A. Morales, H.L. Rudman, Nancy France*Assistant Clinical Professors* S.N. Albert, W.E. Bageant, E.J. Dealy, C.E. Fierst-

K.J. Hassan

Instructors Hildegard Manitsas, Mary Salto***301 Anesthesiology (1)**

Fundamentals of anesthesia reviewed and correlated with other medical specialties. (Spring)

***302 Clinical Clerkship (5)**

Clinical preoperative evaluation, surgical and obstetrical anesthesia, infant and adult resuscitation, inhalation therapy, management of patients in coma, shock, and other problems which may be encountered in medical practice. Univ. Hosp. (2-week periods throughout academic year)

380 Anesthesiology (5)

Clinical preoperative evaluation, surgical and obstetrical anesthesia, infant and adult resuscitation, inhalation therapy. 2 seniors; 4-week elective periods. Univ. Hosp. (Spring)

* Required for medical students.

- 381 Anesthesiology (5)** Bageant
Clinical preoperative evaluation, surgical and obstetrical anesthesia, infant and adult resuscitation; inhalation therapy; blood volume determinations. 2 seniors; 4-week elective periods. Wash. Hosp. Center (Spring)
- 382 Anesthesiology (5)** Dealy
Surgical anesthesia, resuscitation, laryngoscopy, endotracheal technique, preoperative evaluation. 2 seniors; 4-week elective periods. V.A. Hosp. (Spring)
- 383 Pediatric Anesthesia (5)** Hassan
Clinical preoperative evaluation, pediatric anesthesia, infant resuscitation. 2 seniors; 4-week elective periods. Children's Hosp. (Spring)

Biochemistry

Professors C.R. Treadwell (*Chairman*), B.W. Smith, G.V. Vahouny
 Professorial Lecturers W.W. Burr, Jr. (*Isotopes*), R.W. Albers (*Brain*), Roscoe Brady, Jr. (*Brain*), Arnold Schaefer, Edward Steers, Jr., W.F. Anderson (*Genetics*), Pedro Cuatrecasas (*Enzymology*), H.L. Ozer, Gordon Guroff
 Associate Professor J.M. Bailey
 Assistant Professors Glenn Walker, Linda Gallo (*Research*)
 Special Lecturers Walter Mertz (*Inorganic Metabolism*), J.C. Smith, Jr.

- *201 Medical Biochemistry (8)** Staff
Lectures and laboratory; emphasis on basic principles and their relation to medicine. (Fall)
- 221-22 General Biochemistry (4-4)** Vahouny
For graduate students. Lectures and laboratory. Prerequisite: Chemistry 52, 54. Material fee, \$20 a semester. (Academic year)
- 224 Biochemistry of Enzymes (1)** Cuatrecasas
Biochemistry of enzymes and enzyme reactions. Prerequisite: Biochemistry 201 or 221. (Spring)
- 225 Biochemical Procedures (3)** B. Smith and Staff
Laboratory course. Material fee for nonmedical students, \$16. Content differs each time course is offered; may be repeated for credit. (Fall and spring)
- 227 Biochemistry Seminar (1)** Staff
Current literature in biochemistry, mainly for graduate students, but open to limited number of specially qualified medical students. Content differs each time course is offered; may be repeated for credit. (Fall and spring)
- 232 Proteins and Amino Acids (1)** Steers
Prerequisite: Biochemistry 221. (Spring)

* Required for medical students.

241 Isotopes (3)

Burr

Theoretical characterization of isotopes and their applications in biology and medicine. Attention given to counting, health physics and radiation safety, autoradiography, chromatography. Laboratory fee for nonmedical students, \$16. (Spring)

251 Carbohydrate Metabolism (1)

Prerequisite: Biochemistry 201 or 222. (1971-72 and alternate years)

252 Biochemistry of the Brain (1)

Albers, Brady

For medical students; open to limited number of graduate students. Recent biochemical developments in structure, functions, and metabolic processes unique to the brain. (Spring)

254 Human Nutrition (1)

Pollack

For medical students; open to limited number of graduate students. Application of nutritional principles in humans. (Spring)

256 Biochemistry of Organ Function (1)

Kramer

For medical students; open to limited number of graduate students. Emphasis on biochemical processes unique to particular organ systems; application of these processes to evaluation of function. (Spring)

258 Inherited Metabolic Diseases (1)

Ozer

For medical students; open to limited number of graduate students. Contribution of molecular biology to understanding of human mutations and hereditary diseases. Specific disease states and genetics of protein structure discussed. Prerequisite: Biochemistry 222. (Spring)

260 Biochemistry of the Steroids (1)

O. Dodek

For medical students; open to limited number of graduate students. Basic chemistry of the steroids, pathways of biosynthesis and metabolism, regulatory mechanisms, physiologic effects, clinical measurement of endogenous steroids, clinical manifestations of steroid imbalance, steroid changes in pregnancy, and steroid therapy. (Spring)

262 Biochemistry of the Lipids (1)

Vahouny

For graduate students; open to maximum of 15 medical students. Research techniques for study of lipid biochemistry. 1970-71 and alternate years: metabolism of lipids, including digestion, energy production, biosynthesis, function in specialized tissues and subcellular structures. 1971-72 and alternate years: chemistry, properties, occurrence of important classes of biological lipids. Content differs each time course is offered; may be repeated for credit. (Spring)

266 Biochemical Genetics (1)

Anderson

For medical students; open to limited number of graduate students. (Spring)

279 Research in Renal Function, Mutarotase, and Sugar Transport (10)

Bailey

Clinical significance of plasma mutarotase levels in kidney disease. seniors; 8-week elective periods. School of Medicine (Spring)

- 280 **Research in Experimental Atherosclerosis (10)** Bailey
Study of factors influencing the development and course of atherosclerosis in rabbits. 2 seniors; 8-week elective periods. School of Medicine (Spring)
- 281 **Research in Biochemistry of Carbohydrates and Enzymes (10)** B. Smith
Research in a problem already under investigation in the Department or a project in related fields suggested by the student. 2 seniors; 8-week elective periods. School of Medicine (Spring)
- 282 **Research in Biochemistry of Lipid Metabolism and Transport (10)** Vahouny
Biochemical investigation of a clinical problem involving lipids of special interest to the student, or participation in existing research program in the Department. 2 seniors; 8-week elective periods. School of Medicine (Spring)
- 283 **Research in Metabolic Regulation within the Heart (10)** Vahouny
Studies on metabolic regulation and effect of drugs. 2 seniors; 8-week elective periods. School of Medicine (Spring)
- 286 **Research on Transfer RNA and Protein Biosynthesis in Normal and Tumor Cells (10)** R.C. Gallo*
Investigative work on isolation and purification of RNA fractions and function in protein synthesis. 2 seniors; 8-week elective periods. National Cancer Institute (Spring)
- 295 **Research in Biochemistry (arr.)** Staff
For freshman and sophomore medical students and graduate students. Participation in a project under investigation in the Department or one in a related field suggested by the student and approved by the Staff. Content differs each time course is offered; may be repeated for credit. (Fall and spring—as arranged)
- 299-300 **Thesis Research (3-3)** Staff
- 398 **Advanced Reading and Research (arr.)** Staff
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged)
- 399 **Dissertation Research (arr.)** Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged)

Clinical Engineering

Professor C.A. Caceres (Chairman)
Associate Professor W.E. Anderson
Instructor J.I. Auñón

Dr. Gallo is Senior Investigator at the National Cancer Institute.

351 Medical Engineering for Medical Students (10) Fowler, Eisenberg*
(Formerly Medicine 379 Medical Engineering for Medical Students)

Medical and engineering students will be paired whenever possible to provide a mutual introduction to the principles and practices of each discipline. Instruction will be provided through seminar and lecture periods and participation in current laboratory projects. Consultation with instructor required prior to enrollment. 2 seniors; 8-week elective periods. (Spring)

353 Electronics and Computers (10) Caceres
(Formerly Medicine 399 Heart Disease: Electronics and Computers II)

Research in one of the following areas—computer analysis of arrhythmias, correlation of ECG with autopsy data, ECG variability, ECG during exercise, instrumentation in blood pressure recording, computer analysis of pulmonary function tests, plethysmograph, phonocardiography, statistical analysis of ECG data, automatic identification of bacteria, computer analysis of electrophoretic curves. 2 seniors; 8-week elective periods. (Spring)

Dermatology

Professor R.S. Higdon (Chairman)

Clinical Professor J.Q. Gant, Jr.

Associate Clinical Professor Hayden Kirby-Smith

Assistant Professor Mervyn Elgart

Assistant Clinical Professors C.S. Brown, Manuel Landman, P.L. Repetto, Jr.,

Donald Mitchell, L.E. Harman, Jr., C.S. Thurston, L.J. Eanet

Clinical Instructors Phyllis Huene, H.S. Golomb, Maria Turner

Special Lecturer Gerda Landman

†301 Dermatology (1)

Diseases of the skin. (Fall)

380 Dermatology Clinic (5)

Conferences, lectures, and attendance at Dermatology Clinic where patients with wide variety of dermatoses are seen. To acquaint students with diagnosis and treatment of common skin disorders. Dermatology surgical procedures, technique for using liquid nitrogen, culture and identification of fungi, microscopic diagnosis of common cutaneous diseases. 2 seniors; 4-week elective periods. Walter Reed Gen. Hosp. (Spring)

381 Dermatology Clinic (5)

Same as Dermatology 380. 1 senior; 4-week elective periods. Air Force Base Hosp. (Spring)

* Dr. Eisenberg is Associate Professor of Engineering and Applied Science in the School of Engineering and Applied Science.
† Required for medical students.

Epidemiology and Environmental Health

Professors J.W. Millar (Chairman), J.A. Halsted (*International Health*)

Professorial Lecturer Daniel Finucane

Associate Professor C.R. Hartman

Associate Clinical Professors David Frost, G.O. Pierce, W.J. Zukel

Assistant Professors M.E. Landay, E.N. Kassira, H.A. Bradford

Assistant Clinical Professors Lawrence Pyle, Jr., John Vinyard, Jr.

Assistant Professorial Lecturers S.H. Barboo, Jr., C.H. Miller, N.E. Manos

*201 Introduction to Epidemiology and Environmental Health (2)

Millar and Staff

For medical students; open to qualified graduate students. Principles and methodology of epidemiology and biostatistics. Ecological approach to health and disease, including parasitology and mycology. (Spring)

217 Advanced Mycology (1)

Landay

Advanced study of fungi. Prerequisite: Microbiology 211 or equivalent. (Fall)

218 Advanced Parasitology (1)

Millar

For medical students; open to qualified graduate students. Study of host-parasite relationships, including laboratory procedures. 10 sophomores or juniors. (Fall)

230 Biostatistics (2)

Bradford, Manos

For graduate students. Application of statistical methods to health-related problems. Prerequisite: elementary college algebra. (Spring)

295 Research in Epidemiology (arr.)

Staff

Participation in experimental studies in infectious diseases and research in community medicine. Admission by permission of Department. (Fall)

*301 Epidemiology and Environmental Health (1)

Staff

Lectures and seminars. Emphasis on means of organizing community to provide epidemiological solutions to health problems, developing an awareness of health resources and significant socioeconomic considerations in bringing total health to the community, showing importance of health as related to individual citizens. World health problems. Prerequisite for graduate students: Microbiology 211, 212; or equivalent. (Spring)

351 Global Epidemiology (1)

Staff

For medical students; open to graduate students by arrangement. Geographic pathology of disease and international aspects of disease prevention and control, including world demographic problems. 20 sophomores or juniors. (Fall)

352 Seminar: Experimental Epidemiology (1)

Staff

For medical students; open to graduate students by arrangement. Student participation in definitions, design, and methods for developing epidemiologic studies of diseases. Coordinated so that protocol developed can be applied to field use. 10 sophomores or juniors. (Fall)

Required for medical students.

353 Military Preventive Medicine (1)

Operational medicine, environmental and sanitation problems, epidemiologic diseases of military importance and their prevention and control. Medical aspects of aerospace and submarine medicine. Sophomores or juniors. (Fall)

380 Methods in Public Health (5)

Rotation through all divisions, including mental health, maternal and child health, environmental medicine, communicable diseases; field trips. (Spring)

382 Clinical Practice of Public Health (10)

Study in depth of public health practice, participating as member of a mobile unit screening for various diseases in the community. 1 senior; 8-week elective periods. D.C. Dept. of Public Health (Spring)

384 Research in Public Health (10)

Supervised research; the student selects the topic from a broad range of public health problems, including mental health, maternal and child health, environmental medicine, epidemiological methods, biostatistics. seniors; 8-week elective periods. (Spring)

385 Studies in Cardiovascular Disease (5)

Participation in one or more current studies at the National Heart Institute; selection by the student. 2 seniors; 4-week elective periods. (Spring)

386 Parasitic Diseases (5)

Diagnosis, treatment, epidemiology, laboratory aspects of intestinal parasitic diseases; intensive instruction in sigmoidoscopy. 1 senior; 4-week elective periods. (Spring)

398 Advanced Reading and Research (arr.)

Limited to students preparing for Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged)

399 Dissertation Research (arr.)

Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged)

Medical and Public Affairs

Professor Murdock Head (Chairman)

Associate Professor C.W. Shilling

***301 Forensic Medicine (1)**

Four weeks of Law 385 *Trial Practice Court*. Practice court involving trial of medical malpractice cases. Junior medical students prepare and present the complaint and defense. (Fall—Saturday mornings)

* Required for medical students.

351 Forensic Medicine (2)

*Sharpe, Head

Open to sophomore medical students. Examples drawn from the range of problems arising when the professional interests of lawyers and physicians overlap. Problem contexts include malpractice, personal injury litigation, licensure and discipline, ethics and economics, hospitals and other institutions of practice, and compelled treatment. (Fall)

Medicine

Professors T.M. Brown, M.J. Romansky, L.K. Alpert, J.M. Evans, A.E. Parrish, F.W. Wolff, Halla Brown, Irene Tamagna, J.J. Feffer, W.N. Jensen (*Chairman*)

Clinical Professors A.G. Prandoni, Herbert Pollack (*Biochemistry*), J.J. Rheingold, T.S. Sappington, A.B. Rosenbaum, T.J. Greenwalt, F.L. Land, Benjamin Manchester, L.E. Putnam, M.H. Stolar, C.W. Thompson

Associate Professors S.W. Bush, W.R. Felts, Jr., G.A. Kelser, Jr. (*Associate Chairman*), M.H. Jacobson, Irene Siu, R.C. Fowler, Ariel Hollinshead (*Research—Pharmacology*), Mary Watt, N.C. Kramer, Milton Corn, Rashid Massumi, J.P. Nasou, J.A. Curtin, J.K. Viktora (*Research—Biochemistry*), J.C. Penhos (*Research—Endocrine Research*), H.W. Clark, Jr. (*Research—Biochemistry*), D.J. Massaro, J.B. O'Connell, Lawrence Pierce, W.O. Dobbins III, R.G. Loudon, Juan Calatayud, K.L. Becker, J.M. Bacos

Associate Clinical Professors O.R. Farley, Janet Travell, Alfred Brigulio, Joseph Ney, J.W. Latimer, Jr., T.J. Abernethy, F.S. Bacon, Elizabeth Hill, S.J.N. Sugar, H.D. Ecker, C.W. Jones, E.S. Gladsden, Maurice Mensh, F.J. Murray, E.P. Parker III, M.H. Rosenberg, Milton Gusack, Jack Kleh, H.M. Silver, J.P. Mann, Edward Adelson, R.R. Belton, S.D. Loube, Arthur Ruskin, C.A. Rosenberg, H.E. Ticktin, L.J. Thomas, W.O. Bailey, Jr., Ruth Benedict, L.S. Blumenthal, Louis Ross, S.W. Kirstein, Israel Kessler, W.D. Brill, Marvin Fuchs, C.A. Schulman, Alfred Baer, Herbert Abramson, Bertle Nelson, J.M. Pisani

Assistant Professors F.A. Peck, P.A. Gorman, J.D. Finkelstein, Karl Wiplinger, J.S. Bailey (*Research—Microbiology*), B.F. Johnson (*Research—Clinical Pharmacology*), C.H. Oliver, Jr., T.R. Shworles (*Social Psychology*), Henry Yeager, Jr., S.H. Danovitch, Gerrit Besselaar, Philip Witorsch

Assistant Clinical Professors T.A. Gonder, David Horwitz, R.B. Castell, S.T. Gibson, M.H. Rose, Adolph Friedman, R.B. Miller, F.D. Chapman, R.G. Taylor, J.W. Long, Virginia Beelar, J.F. Ambury, T.L. Hartman, Borris Rabkin, L.A. Craig, Jr., A.W. Danish, Alvin Seltzer, C.E. Law, E.L. Rea, Conrad Gossels, H.O. Mott, J.H. Watson, N.H. Rubenstein, W.L. Stone III, B.H. Ostrow, C.D. Cooper, W.R. Ehrmantraut, G.A. Chapman, F.M. Gross, Eleanor Makel, Silas Babin, Jr., Alice Brigham, Jack Crowell, D.S. Davis, J.H. Epstein, F.K. Harris II, R.F. Dyer, D.M. Tormey, E.H. Bauersfeld, William Lewis, E.J. Leonard, H.I. Passes, C.W. Foulke, A.A. Lear, O.W. Donnelly, R.S. Poole, H.C. Sadin, S.J. Talpers, W.L. Hall, George Sharpe, Raymond Scalettar, M.A. Sislen, C.J. Savarese, Jr., G.C. Buchanan, G.T.

*Mr. Sharpe is Professor of Law in the University's National Law Center.

Economos, Irwin Ardam, S.E. Barr, H.A. Moskovitz, J.T. Hagenbucher, G.N. Polis, W.F. Morrissey, R.A. Apter, M.S. Artenstein, J.E. Stauch (*Research*), Jean Lucas, B.R. Cooperman, Francis Chucker, Gilbert Hurwitz, R.S. Wilkinson, W.E. Gallinek, L.H. Biben, W.H. Harvey, William Kurstin, Dorothea Chapman, L.H. Fenton, F.J. Jarsen, C.W. Humphreys, Jr., Paul Schlein, D.J. Hand, Ruben Lopez-Toca, J.C. Rios, P.A. Haber, William Whitmore, Jr., J.R. Shapiro, Francisco Gnecco-Mozo, J.H. Piedra

Instructors C.H. Chan (*Metabolic Research*), W.R. Ayers (*Research*), Trygve Asmundsson, S.H. Mendelson, Mustafa Saleem, G.H. Nachnani

Clinical Instructors N.K. Bohrer, N.G. Goodman, J.D. Herman, Scheldor Kress, Frederick Meyers, Lily Ruckstuhl, C.U. Shilling, H.O. Schindelar, R.M. Kaufman, Andre Barrabini, Robert Kramer, F.J. Borsody, Richard Schoenfeld, M.J. Halberstam, D.W. Datlow, G.G. Kay, R.A. Fischer, W.T. Moore, R.M. Huffman, E.B. Thompson, S.A. Lundberg, Florentino Palmor, S.J. Conway, L.P. Appel, M.A. Herman, R.O. Knox, R.S. Waldman, R.W. Turner, C.W. Kinzer, S.A. Schwartz, Andree Thomas, Marvin Schneider, Fidel Quintana, Gladys Rosenstein, Herman Rosenstein, A.G. Brody, Harris Kenner, N.P. Trujillo, I.V. Magal, G.A. Tralka, L.F. Barker, R.J. Linderman, D.D. Haut, Isaac Weiszer, P.R. Lenz, A.J. Anderson, P.G. Rochman, J.F. Mermel, Richard Hochman, P.J. Sullivan, S.H. Schachner, M.F. Palmor, M.M. Shefferman, Pooliang Chang, E.J. Chap, L.M. Weiss, N.T. Connally, Bernard Grand, J.C. Perkins, A.M. Mondzac, H.J. Alpert, James Christodoulou, P.V. Holland, Leo Janis, A.P. Klaus, A.L. Komaroff, R.A. McConnaughey, J.J. Schneider

Special Lecturers Sol Katz (*Pulmonary Disease*), R.W. Berliner (*Renal Disease*), W.L. Nalls (*Pulmonary Disease*), Albert Sjoerdsma (*Internal Medicine*), D.S. Frederickson (*Internal Medicine*), Pierre Tulou, T.W. Mattingly (*Cardiology*)

*301 Physical Diagnosis (4)

Putnam and Staff

Theoretical and practical application of principles of physical diagnosis; training with bed patients under individual instruction. Designed to develop ability in examination of patients and case history taking. Univ. and D.C. Gen., and affiliated hosps. (Spring)

*302 Laboratory Medicine (2)

Rheingold and Staff

Clinical application of laboratory examinations of blood, body fluids, excreta, etc. (Spring)

*303 Principles of Internal Medicine (2)

Principles and practice of internal medicine. (Spring)

*305 Inpatient Clerkship I (10)

T. Brown, Romansky, and Staff

Training in comprehensive study of patients; history and physical examination; ward rounds, consultations, conferences, preceptorial teaching seminars. Univ. and D.C. Gen. hosps. (8-week periods throughout academic year)

*306 Inpatient Clerkship II (5)

Hill, Apter, Katz, Curtin, and Staff

Continuation of Medicine 305. Fairfax and V.A. hosps. and Wash. Hosp. Center (Spring—4 weeks)

* Required for medical students.

- *308 University Clinic (10)** Watt and Staff
Studies of ambulatory patients under close supervision. Daily clinics in general medicine and various specialties; conferences on current cases. Univ. Clinic (8-week periods throughout academic year)
- 309 Medical Pulmonary Conferences (1)** Gusack, Silver
Weekly conference, primarily for interns and residents. 30 students. Univ. Hosp. (Fall)
- 310 Hematology Rounds (1)** Rheingold
Diagnostic and therapeutic evaluation of hospitalized patients with hematologic disorders. 6 students. Univ. Hosp. (Fall)
- 313 Special Topics in Medicine (1)** Pollack, N. Kramer, H. Brown
Application of principles of basic sciences to problems of clinical medicine. (Fall)
- 345 Introduction to Hypertensive Cardiovascular Disease (1)** Tamagna
2 juniors. Univ. Clinic (Fall—1 month)
- 346 Clinical Evaluation of Patients with Hematological Disorders (1)** Corn
4 juniors. D.C. Gen. Hosp. (Fall—1 month)
- 347 Clinical Evaluation of Patients with Cardiac Disorders (1)** Massumi, Rios
4 juniors. D.C. Gen. Hosp. (Fall—1 month)
- 348 Clinical Evaluation of Patients with Gastrointestinal Disorders (1)** Ticktin
4 juniors. D.C. Gen. Hosp. (Fall—1 month)
- 349 Introduction to Clinical Endocrinology and Metabolism (1)** Becker
20 juniors. V.A. Hosp. (Fall—1 month)
- 350 Clinical Introduction to Liver Disease (1)** Finkelstein
6 juniors. V.A. Hosp. (Fall—1 month)
- 351 Introduction to Clinical Nephrology (1)** O'Connell
8 juniors. V.A. Hosp. (Fall—1 month)
- 355 Clinical Electrocardiography (1)** Calatayud
Basic principle of electrocardiography. Univ. Hosp. (Fall)
- 360 Hematology Preceptorship (5)** Rheingold
Observation of and participation in diagnosis and treatment of patients with hematologic disorders in the office and hospital. 1 senior; 4-week elective periods. (Spring)
- 362 Cardiology (5)**
Opportunity to observe and take part in cardiac evaluation and patient care under tutorial supervision. Participation in electrocardiograph interpretation and other diagnostic procedures as well as activities in the Intensive Care Units, Pediatric Wards, and Cardio-Thoracic Surgical pro-

gram. 3 seniors; 4-week elective periods. Walter Reed Gen. Hosp. (Spring)

363 Pulmonary and Communicable Diseases (5) Pitts*

Clinical experience with a wide variety of chronic pulmonary and infectious disease problems. Thoracenteses and pleural biopsies, spinal taps, and pulmonary function testing. Weekly basic pulmonary physiology lectures and attendance at Medical-Surgical Chest conferences. 2 seniors; 4-week elective periods. Walter Reed Gen. Hosp. (Spring)

364 Renal-Metabolic Diseases (5)

Combined exposure to endocrine and renal problems; emphasis on physiologic aspects of the diseases seen in this area. 2 seniors; 4-week elective periods. Walter Reed Gen. Hosp. (Spring)

366 Clinical Endocrinology (5) Becker

Clinical experience—endocrinology, metabolism, and genetics. Student will be given opportunity to examine endocrine patients, make preliminary diagnosis, and assist in treatment. 1 senior; 4-week elective periods. V.A. Hosp. (Spring)

367 Research in Clinical Electrocardiography (10) Calataxud

Active participation in research in clinical electrocardiography. Correlations of the ECG with clinical and/or pathological data. Prerequisite: Medicine 355. 1 senior; 8-week elective periods. Univ. Hosp. (Spring)

368 Biochemical Effects of Drugs in Man (5) Viktora, Wolff

Correlation between clinical research at the bedside and laboratory experimentation. Participation in clinical and laboratory follow-up of patients. 2 seniors; 4-week elective periods. Wash. Hosp. Center (Spring)

369 Metabolic Fate of Drugs in Animals and Man (10) Viktora, Penhos, Johnson, Wolff

Introduction to methods used in study of drug metabolism, qualitative and quantitative chromatography, organ perfusion studies. 4 seniors; 8-week elective periods. Wash. Hosp. Center (Spring)

370 Inpatient Medicine (5) Apter

Diagnostic studies and clinical management of bed patients on Medical Service; teaching rounds and conferences. 4 seniors; 4-week elective periods. Fairfax Hosp. (Spring)

371 Arthritis and Rheumatic Diseases (5) T. Brown, Bush, Felts, Oliver

Introduction to clinical problems in diagnosis and treatment of arthritis and rheumatic diseases, review of clinical and research procedures employed in laboratory. 2 seniors; 4-week elective periods. Univ. Hosp. and Clinic (Spring)

372 Clinical Renal Disease (5) Parrish, Kramer

Clinical and laboratory procedures for study of renal disease; ward rounds, consultations, conferences, seminars. 1 senior; 4-week elective periods. Univ. and D.C. Gen. hosps. (Spring)

* Dr. Pitts is Chief of Pulmonary and Communicable Diseases, Walter Reed General Hospital.

- 373 Inpatient Medicine (5)** Romansky, Ticktin
Comprehensive study of patients on GWU Medical Service; ward rounds, consultations, seminars, conferences. 8 seniors; 4-week elective periods. D.C. Gen. Hosp. (Spring)
- 374 Clinical Microbiology (5)** Romansky
Clinical and laboratory problems in infectious diseases; rounds, conferences, seminars. 1 senior; 4-week elective periods. D.C. Gen. Hosp. (Spring)
- 375 Studies in Hypertension (10)** Tamagna
Participation in care of inpatients and outpatients and in research projects. 1 senior; 8-week elective periods. Univ. Hosp. (Spring)
- 376 Total Patient Care (10)** Tamagna
Teamwork program for total patient care, including clinical and psychologic studies and rehabilitation; group conferences; research studies. 1 senior; 8-week elective periods. Univ. Hosp. (Spring)
- 377 Hepatic and Metabolic Diseases (5)** Ticktin
Clinical studies of patients with hepatic and pancreatic disease, endoscopy, splenoportography, liver biopsy; research studies in enzymes and ammonia metabolism in hepatic diseases. 2 seniors; 4-week elective periods. D.C. Gen. Hosp. (Spring)
- 378 Endocrinology and Cancer Chemotherapy (5)** Alpert
Clinical and laboratory work; emphasis on endocrinology (and metabolism) or cancer chemotherapy, depending on the student's choice. 2 seniors; 4-week elective periods. Univ. Clinic (Spring)
- 379 Hepatic Diseases (5)** Finkelstein
Full participation in clinical program involving evaluation and management of patients with all types of hepatobiliary disease using routine and specialized techniques; teaching rounds, clinical and research seminars. Additional clinical or laboratory research experience encouraged. 2 seniors; 4-week elective periods. V.A. Hosp. (Spring)
- 380 Clinical Application of Tissue Immunology (5)** N. Kramer
Application of immunologic methods to study of human hypersensitivity states and metabolic diseases; serum proteins, including protein hormones and enzymes; research principles and methods. 3 seniors; 4-week elective periods. D.C. Gen. Hosp. (Spring)
- 382 Clinical Cardiopulmonary Physiology (10)** Massumi
Clinical and laboratory evaluation of cardiac and pulmonary problems; training in ECG, phonocardiography, cardiac catheterization, angiocardiology, pulmonary function testing. Research encouraged. 1 senior; 8-week elective periods. D.C. Gen. Hosp. (Spring)
- 383 Laboratory Studies of Human Entero- and Respiratory Viruses (10)** Perkins
Research program involving characterization of new entero- and respiratory viruses; rounds, conferences, seminars; laboratory techniques. 1 senior; 8-week elective periods. N.I.H. (Spring)

384 Inpatient Medicine (5)

Curtin

Clinical case studies, including histories and physical examinations, consultations, pathologic and radiologic follow-up; library assignments; ward rounds and conferences. 6 seniors; 4-week elective periods. Wash. Hosp. Center (Spring)

385 Inpatient Medicine (5)

Katz

Team member in clinical program involving complete study of medical patients. Ward rounds, seminars, conferences. 2 seniors; 4-week elective periods. V.A. Hosp. (Spring)

386 Inpatient Medicine and Medical Emergencies (5)

Curtin, Bacos

To prepare seniors for internship. Assignments to inpatient medicine (Intensive Care Unit) and emergency room; ward rounds and conferences, radiologic and pathologic follow-up; library assignments. 4 seniors; 4-week elective periods. Wash. Hosp. Center (Spring)

387 Renal Diseases—Clinical Fluid and Electrolyte Problems (10)

M. Jacobson

Rounds, clinics, conferences, clinical research projects. 1 senior; 8-week elective periods. Univ. Hosp. (Spring)

388 Experience in Allergy (5)

H. Brown

Diagnosis and treatment of allergic states; skin, eye, and scratch tests; clinical and experimental studies; library assignments. 2 seniors; 4-week elective periods. Univ. Hosp. (Spring)

389 Research (3)

Staff

Research project under supervision of members of Department of Medicine. Limited to juniors. Univ. and D.C. Gen. hosps. (Fall)

390 Inpatient Medicine (10)

Evans, Nachmani

Comprehensive study of Medical Service patients; ward rounds, consultations, conferences, preceptorial teaching, seminars. 6 seniors; 8-week elective periods. Univ. Hosp. (Spring)

391 Clinical Cardiology (5)

Shu

Includes electrocardiography. 8 seniors; 4-week elective periods. Univ. Hosp. (Spring)

392 General Practice Preceptorship (5)

*J.P. Anderson

Preceptorship in small urban community general practice. 1 senior; 4-week elective periods. Waynesboro, Va. (Spring)

393 Clinical Hematology (5)

Corn

Clinical and laboratory studies of patients with hematologic disorders, bone marrow and peripheral blood smears, hemoglobin electrophoresis, evaluation of coagulation mechanism. 1 senior; 4-week elective periods. D.C. Gen. Hosp. (Spring)

394 Clinical Cardiology (5)

Diagnosis in heart disease; emphasis on clinical examination and electrocardiography. 2 seniors; 4-week elective periods. Univ. Hosp. Heart Station (Spring)

* Dr. Anderson is in private practice in Waynesboro

398 Introduction to Cardiology (5)

Bacos

Clinical cardiology, correlating bedside approach to cardiovascular diagnosis with special diagnostic studies, including phonocardiography, atrial electrocardiography, cardiac catheterization, angiocardiology. 1 senior; 4-week elective periods. Wash. Hosp. Center (Spring)

399 Research in Sulfur Amino Acid Metabolism (10)

Finkelstein

Investigation of factors regulating methionine metabolism in mammalian liver utilizing assays of enzyme activity, *in vitro* hepatic perfusion, and *in vivo* metabolic studies. 1 senior; 8-week elective periods. V.A. Hosp. (Spring)

Microbiology

Professors A.M. Griffin, Mary Louise Robbins, R.C. Parlett (Chairman), L.J. Griffith (Visiting), Rudolph Hugh
 Professorial Lecturers F.B. Gordon (Virology), Dorothy Heilman (Cellular Immunology), M.S. Legator (Microbial Genetics)
 Associate Professors L.F. Affronti, Melvin Reich
 Assistant Professors G.L. Wright, Jr., Yang-Ming Chu, Kun-yen Huang
 Assistant Professorial Lecturers P.J. Price, Rosalie De Giovanni-Donnelly, M.H. Cohen

***201 Medical Microbiology (6)**

Parlett and Staff

For medical students; open to qualified graduate students. Bacteria, rickettsiae, viruses, yeasts, molds, protozoa, metazoa which relate to the health and disease of man—cultural studies, methods of diagnoses, theories. (Spring)

211 Microbiology (4)

Staff

For graduate students. Bacteria, fungi, rickettsiae, viruses. Prerequisite: any biological laboratory science, Chemistry 51-52, 53-54. Laboratory fee, \$16. (Fall)

212 Pathogenic Microbiology (4)

Staff

For graduate students. Continuation of Microbiology 211; emphasis on harmful activities of microorganisms. Prerequisite: Microbiology 211 or equivalent. Laboratory fee, \$16. (Spring)

214 Tissue Cell Culture and Somatic Variation (4)

Chu, Price

Techniques of tissue culture and means of studying somatic variations. Prerequisite: Microbiology 211, 212. (Spring)

225 Microbial Physiology I (3)

Affronti, Reich

Biochemical features of various microorganisms—especially bacteria—described and compared with those of the animal cell. Prerequisite: Biochemistry 221-22, Microbiology 211; or permission of instructor. (Fall)

* Required for medical students.

- 226 Microbial Physiology II (3)** Affronti, Reich
Interactions of drugs and microorganisms—action of drugs on microbes, resistance of microbes to drugs, metabolism of drugs by microbes. Prerequisite: Microbiology 225 or permission of instructor. (Spring)
- 230 Immunology (4)** Wright
For graduate students. Fundamental immunologic concepts. Serologic and immunologic procedures as applied to clinical and research situations emphasized in the laboratory. Prerequisite: Microbiology 212 or equivalent. Laboratory fee, \$16. (1970-71 and alternate years: fall)
- 231 Cellular Immunology (2)** Staff
Study of immunological functions of reticulo-endothelial tissues, theories of autoimmunity, graft rejection, tumor immunity, delayed hypersensitivities, and heritable immunogenic defects. (Fall)
- 233 Molecular Biology of Viruses (4)** Robbins, Huang
Primarily for graduate students. Biochemical and genetic characterization of viruses. Prerequisite: Microbiology 201 or 211. Laboratory fee for nonmedical students, \$16. (Fall)
- 235 Systematic Bacteriology (2)** Hugh
History of bacterial classification, international rules of nomenclature as applied to bacteria, development of bacterial classification based upon relationships, survey of characteristics of bacterial groups. Prerequisite: Microbiology 212 or equivalent. (1971-72 and alternate years: fall)
- 251 Bacteriology (2)** Hugh
Primarily elective course for medical students; open to graduate students. Clinical situations involving bacteriology. Prerequisite: Microbiology 211 or equivalent. (Fall)
- 255 Virology (2)** Huang, Robbins
Primarily elective course for medical students; open to graduate students. General principles of virology; emphasis on clinical situations. Prerequisite: Microbiology 201 or 212. (Fall)
- 257 Immunochemistry (3)** Wright
Primarily for graduate students; open to qualified medical students. Biochemical, physiochemical, and genetic aspects of immunologically active substances. Prerequisite: Biochemistry 221-22 or equivalent. Microbiology 211, 212, and 230 recommended. Limited enrollment. (1971-72 and alternate years: spring)
- 258 Microbial Genetics (2)** De Giovanni-Donnelly, Legator
For medical and graduate students. Survey of microbial systems that depict basic concepts of genetic principles. (Spring)
- 277-78 Seminar: Microbiology (1-1)** Staff
For medical and graduate students. Required of graduate students. (Academic year)
- 280 Virology (10)** Robbins, Huang
Selected problems; library assignments, laboratory studies. 4 seniors; 3-week elective periods. (Spring)

- 281 **Bacterial Physiology** (5) Reich, Affronti
Selected problems; library assignments, laboratory studies. 5 seniors; 4-week elective periods. (Spring)
- 282 **Immunology** (5) Wright, Chu, Parlett
Research problems. 3 seniors; 4-week elective periods. (Spring)
- 283 **Bacteriology** (10) Hugh
Selected problems; library assignments, laboratory studies. 2 seniors; 8-week elective periods. (Spring)
- 284 **Microbial Genetics** (5) De Giovanni-Donnelly
Research problems; 3 seniors; 4-week elective periods. (Spring)
- 285 **Immunologic Characterization of Cell Lines in Tissue Culture** (10) Chu, Price
Preparation of specific antigens from a cell strain and production of antibodies against this strain in appropriate mammalian host; identification of unknown cell types using tissue culture, serology, immunochemistry. 2 seniors; 8-week elective periods. (Spring)
- 286 **Diploid Cell Lines in Tissue Culture** (10) Chu, Price
Mammalian cells growing on glass surfaces in various media, staining chromosomes and determining chromosome pattern and number, methods of cell preservation such as liquid nitrogen freezing. 2 seniors; 8-week elective periods. (Spring)
- 287 **Transformation of Cells in Tissue Culture** (10) Chu, Price
Conversion of normal cell lines in tissue culture to heteroploid cell lines, demonstration of cancerous nature of transformation by inoculation of hamster cheek pouch. Polyoma virus and SB 40 used with various cell types, including human embryo. 2 seniors; 8-week elective periods. (Spring)
- 293 **Special Topics in Microbiology** (arr.) Staff
Selected topics in Microbiology. May be repeated for credit. (Fall and spring)
- 295 **Research in Microbiology** (arr.) Staff
Content differs each time the course is offered; may be repeated for credit. (Fall and spring)
- 299-300 **Thesis Research** (3-3) Staff
(Academic year)
- 398 **Advanced Reading and Research** (arr.) Staff
Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring)
- 399 **Dissertation Research** (arr.) Staff
Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring)

Neurological Surgery

Professor J.W. Watts

Clinical Professors J.M. Williams, H.V. Rizzoli (Acting Chairman), H.M. Ammerman

Associate Clinical Professors J.P. Murphy, L.G. Kempe

Assistant Professors Emanuele Mannarino, J.L. Fox

Assistant Clinical Professors G.M. Swain, N.H. Horwitz, Ruth Jakoby, A.P. Hustead

Clinical Instructors R.A. Mendelsohn, J.W. Barrett, C.P.H. Carroll

*301 Neurological Surgery (1)

Staff

Clinical lectures and demonstrations dealing with form and function of nervous system. Transition between basic sciences and neurological surgery stressed and correlated. (Fall)

351 Introductory Clinical Neurological Surgery (1)

Staff

Didactic lectures and attendance at the Neurology-Neurosurgical Conference. 10 juniors. (Fall—1 month)

352 Neurosurgical Diagnostic Studies (1)

Staff

Various diagnostic procedures used in the practice of neurological surgery discussed and demonstrated. 10 juniors. (Fall—1 month)

†380 Clinical Neurology and Neurosurgery (5)

Stevens, Ammerman

Clinical clerkship in neurology and neurosurgical service. Emphasis on neurologic examination; indications for special neurologic tests, e.g., arteriograms, pneumoencephalograms, etc.; and operative procedures. 2 seniors; 4-week elective periods. Univ. Hosp. (Spring)

381 Clinical Neurosurgery (5)

Kempe

Participation in all departmental activities: ward rounds, daily conferences, radiographic and pathologic studies, operating room procedures; emphasis on studies of cerebral circulation. 1 senior; 4-week elective periods. Walter Reed Gen. Hosp. (Spring)

385 Clinical Neurosurgery (5)

Fox

Clinical clerkship will include experience with diagnostic procedures: arteriograms, pneumoencephalograms, myelograms, and assisting in operation room; conferences and ward rounds. 1 senior; 4-week elective periods. V.A. Hosp. (Spring)

Neurology

Professors Harold Stevens, Sean O'Reilly (Chairman)

Professorial Lecturers K.M. Earle, N.P. Goldstein

Clinical Professor R.H. Groh

Associate Clinical Professor A.S. Dekaban

* Required for medical students

† An interdepartmental course offered by the departments of Neurological Surgery and Neurology

Assistant Professors M.N. Ozer, Mary Coleman, Ann Barnet
Assistant Clinical Professors G.D. Weickhardt, Ntinios Myrianthopoulos, Virginia Duggins, Cosimo Ajmone Marsan
Instructor Karin Nelson
Clinical Instructors M.C. Korengold, R.H. Robertson, Kristof Abraham, E.C. Wilner, Miryam Davis

***301 Neurology (1)**

Stevens

Clinical lectures and demonstrations dealing with form and function of nervous system. Transition between basic sciences and clinical neurology stressed and correlated. (Fall)

356 Basic Neurology (1)

Stevens

Lectures and demonstrations on the form and function of the nervous system in the light of basic science problems; emphasis on diagnostic techniques. (Fall)

†380 Clinical Neurology and Neurosurgery (5)

O'Reilly, Stevens, Ammerman

Clinical clerkship in neurology and neurosurgical service. Emphasis on neurologic examination; indications for special neurologic tests, e.g., arteriograms, pneumoencephalograms, etc.; and operative procedures. 2 seniors; 4-week elective periods. Univ. Hosp. (Spring)

382 Pediatric Neurology (5)

Clinical clerkship in diagnostic study and care of inpatients and outpatients; conferences and teaching sessions. 2 seniors; 4-week elective periods. Children's Hosp. (Spring)

383 Clinical Neurology (5)

Emphasis on neurological examination and basic sciences, including neuroanatomy, as applied to clinical material. 2 seniors; 4-week elective periods. Walter Reed Gen. Hosp. (Spring)

386 Clinical Neurology (10)

Goldstein

Clinical clerkship under close supervision of highly experienced clinicians and teachers. Trainees prepare histories and conduct physicals, attend rounds and conferences, assist in routine procedures. Abundant clinical material available. 2 seniors; 8-week elective periods. Mayo Clinic (Spring)

Obstetrics and Gynecology

Professors John Parks, R.H. Barter, J.G. Sites (*Chairman*)
Clinical Professors S.M. Dodek, J.A. Dusbabek
Associate Professors Benny Waxman, Larry McGowan
Associate Clinical Professors C.K. Fraser, J.K. Cromer, W.T. Lady, W.P. McKelway, J.W. Pearson, Jr., Shirley Martin, M.S. Kaufman, M.P. Footer, Donald Walters, J.M. Friedman, B.W. Richwine
Assistant Professors C.B. Jacobson, J.L. Marlow

* Required for medical students.

† An interdepartmental course offered by the departments of Neurology and Neurological Surgery.

Assistant Clinical Professors Caroline Jackson, T.A. Wilson, J.R. Epstein, S.H. Shea, G.L. Jarvis, N.J. Price, J.C. Walsh, L.M. Liverett, Peter Soyster, H.P. Treichler, W.H. Cooper, I.W. Rovner, M.W. Sandmeyer, Jr., N.M. Tart, R.B. Nelson, Louis Goldstein, George Speck, A.W. Winshel, R.V. Erkenbeck, L.Q. Pugsley, H.L. Kotz, O.I. Dodek, Jr., J.R. Marshall, G.D. London, H.A. Donald

Instructor L.F. Arias-Bernal

Clinical Instructors A.S. Bright, Elizabeth Crisp, S.M. Belinsky, E.E. Gahres, John Lukasik, D.R. Carlson, E.E. Cunningham, Geraldine Paul, M.H. Hird, S.F. Stewart, Jr., Josiah Sacks, R.E. Badwey, G.R. Hewlett, E.W. Titus, Jr., T.H. Gresinger, J.M. Close, E.R. Kolvereid, D.M. Margulies, J.C. Skilling, S.D. Cooley, L.E. Fettig, H.S. Gates, Jr., R.W. Smith, W.D. Wallace, Jr., P.H. Perkins, R.M. Regan, B.A. Band, C.E. Townsend, D.H. Martin, W.R. Perkins, L.C. Radice, J.E. Anderson, A.A. de Moya

***301 Obstetrics and Gynecology (2)**

Parks, Sites, Waxman

Lectures and demonstrations covering entire field; emphasis on clinical management. (Spring)

***303 Clinical Obstetrics and Gynecology (10)**

Staff

Participation in all obstetrical and gynecological clinics, daily departmental conferences and ward rounds at University, Fairfax, and Columbia hospitals. Manikin demonstrations of mechanism of labor and various types of operative delivery. (Fall)

381 Clinical Obstetrics (5)

Waxman, Sites

Participation in care of obstetrical inpatients. 2 seniors; 4-week elective periods. Univ. Hosp. (Spring)

382 Clinical Gynecology (5)

Waxman, Sites

Participation in care of gynecologic inpatients. 2 seniors; 4-week elective periods. Univ. Hosp. (Spring)

383 Clinical Obstetrics (5)

Fraser

Includes prenatal clinics, lying-in periods, delivery and postpartum care; rounds, conferences, seminars. 2 seniors; 4-week elective periods. Wash. Hosp. Center (Spring)

384 Clinical Gynecology (5)

Cromer, Gahres

Case assignments, rounds and conferences, including tumor board; gynecologic pathology, preparation for surgery, attendance at surgery, postoperative care. 2 seniors; 4-week elective periods. Wash. Hosp. Center (Spring)

386 Inpatient Obstetrics and Gynecology (5)

Supervised instruction in large military hospital; rounds and conferences. 4 seniors; 4-week elective periods. Walter Reed Gen. Hosp. (Spring)

388 Clinical Obstetrics and Gynecology (5)

Soyster

All aspects of inpatient and outpatient obstetrical and gynecologic services; rounds, obstetrical-gynecologic conferences, gynecologic pathology conferences; obstetrical anesthesia; Emergency Room consultations. Home visits

* Required for medical students.

to selected patients with Health Department Nurse. 2 seniors; 4-week elective periods. Fairfax Hosp. (Spring)

389 Clinical Obstetrics and Gynecology (5) Marlow

Participation in patient care, rounds, and conferences. 2 seniors; 4-week elective periods. Columbia Hosp. (Spring)

390 Obstetrical and Gynecological Conference (2)

Regular conferences designed primarily for medical students. Diagnostic and therapeutic problems in clinical obstetrics and gynecology. 5 juniors. Univ. Hosp. (Fall)

391 Cytogenetics (1)

Arias-Bernal

Clinical chromosomal anomalies in man, experimental design and data analysis in cytogenetics, two cytogenetics techniques, sex chromatin analysis, tissue culture procedures. Special students admitted with approval of instructor. (Fall)

392 Reproductive Genetics (1)

C. Jacobson

For medical students; open to graduate students with permission of instructor. Lectures with guest speakers, covering current methodology. Emphasis on human infertility; clinical case presentation and review utilized whenever possible. Major topics: gametogenesis, *in vivo* gamete manipulation and fertilization, nidation, and selective factors in development. 20 sophomores. Univ. Hosp. (Fall)

393 Mutation—Medical and Biological Significance (1)

Legator

Clinical significance of genetic change; classification of mutagenic agents, their mode of action and screening systems for suspected mutagens. Medical complications of human mutation, i.e., toxicity, carcinogenesis, teratogenesis, and reproductive lethality, will be discussed. 25 juniors. (Fall)

394 Genetic Counseling Clinic (1)

C. Jacobson

Participation in physical examination, pedigree review, special testing of patients referred for genetic counseling. Common types of genetic anomalies, diagnostic tests, thorough reproductive counseling. 4 juniors. Univ. Hosp. (Fall)

395 Gametogenesis (1)

*Petersen

For medical students; open to graduate students with permission of instructor. Seminar course with guest lecturers. Covers various clinical and experimental factors in gametogenesis. Emphasis on histogenesis of the gonads, environmental and clinical variables in infertility. 25 juniors. Univ. Hosp. (Fall)

397 Sexual Preparedness for the Physician (1)

Waxman

Lectures and discussions with a view to broadening the knowledge of the anatomy and physiology of the physical component of human sexual activity. Prepares the physician to discuss sexual behavior knowledgeably. 15 juniors. Univ. Hosp. (Fall)

*Dr. Petersen is a consultant to the U.S. Food and Drug Administration.

398 Family Planning, Birth Control, Abortion (1)

Waxman

(Formerly Gynecologic Cancer Clinic (1))

Family planning, birth control, abortion, with community and family references. Sex education of the public and school population as preventive medicine against inadequate birth control and injudicious abortion. 30 juniors. Univ. Hosp. (Fall)

400 Genetic Research (1)

C. Jacobson

Genetic research on human reproduction and developmental defects. Active participation in patient diagnostic studies assured to the student in all phases of a variety of genetic conditions. 4 juniors. Univ. Clinic and Lab. (Fall)

Ophthalmology

Clinical Professors F.D. Costenbader, J.H. King, Jr., L.C. Moss, Benjamin Rones, M.M. Parks, M.G. Alper (*Acting Chairman*)

Associate Professors B.S. Fine, Bernard Wortman (*Research*)

Associate Clinical Professor R.W. Wilkinson

Assistant Professors D.S. Friendly, H.S. Wicker, J.N. Goldman, W.S. Gilbert

Assistant Clinical Professors W.J. Romejko, W.P. Chalfant, Jr., R.E. duPrey

Robert Day, J.H. Lodge, W.B. Glew, J.T. Schwartz, K.A. Simon, H.A. Urweider, B.H. Zeavin, M.O. Ts'o

Clinical Instructors J.R. Weimer, Stephen Pappas, Joanne Economou, D.K. Berler, R.S. Deitch, H.I. Rodman, A.L. Fjordbotten, George Liss, H.M. McAllister, L.E. Perraut, Victor Preziosi, H.J. Starr, D.L. VerLee, M.H. Zimmerman, Leonard Kogan, J.F. Nowell, M.F. Goldberg, Bernard Ehrlich

D.L. Lanter, Richard Huberman

281 Ophthalmic Pathology I (1)

L. Zimmerman

Basic science aspects of diseases of the eye. (Spring)

282 Ophthalmic Pathology II (3)

L. Zimmerman

Diseases of the eye as revealed by gross and microscopic examination. 8 students. Armed Forces Inst. of Path. (Spring)

284 Ophthalmic Pathology III (5)

L. Zimmerman

Daily participation in an active service limited to pathology of the eye and its adnexa. Inflammatory, degenerative, and neoplastic diseases comprise the major categories. 1 senior; 4-week elective periods. Armed Forces Inst. of Path. (Spring)

***301 Ophthalmology (1)**

Basic principles of medical and surgical ophthalmology and neuro-ophthalmology. (Fall)

***302 Ophthalmology (OPD)(1)**

Clinical instruction in external examination of the eye; tonometry and funduscopy. Use of ophthalmological instruments. (Fall)

* Required for medical students.

380 Clinical Ophthalmology (5)

Lodge and Staff

Observation of diseases of the eye and ophthalmic surgery in outpatients and inpatients; rounds, conferences, specialty clinics. 8 seniors; 4-week elective periods. Wash. Hosp. Center (Spring)

Orthopaedic Surgery

Professors J.P. Adams (*Chairman*), H.L. Feffer, P.P. Griffin

Clinical Professor J.S. Neviaser

Associate Professor Peter Kenmore

Associate Clinical Professors L.T. Peterson, Charles Keck

Assistant Clinical Professors C.W. Metz, Jr., R.L. Dow, Byron Genner III, A.G.

Herrington, R.H. Brown, G.J. Schonholtz, G.I. Baker

Clinical Instructors Frances Brennecke, H.E. Lane, Jr., K.A. Peterson, L.A.

Ottenritter, Ronald Ottenberg, E.L. Radin, H.S. Cattell, A.I. Dobranski

(*Anatomy*), William Gilligan, B.P. Vitek

***302 Clinical Clerkship in Orthopaedic Surgery**

Two weeks at either the V.A. or University Hospital.

380 Orthopaedic Surgery (5 or 10)

Adams and Staff

Rotating program: one week of adult office orthopaedics and surgery at University Hospital; one week of children's orthopaedics at Handicapped Children's Unit of D.C. General Hospital or Children's Hospital; one week of general orthopaedics at Walter Reed General Hospital and at Malcolm Grow Hospital, Andrews Air Force Base. 1 senior; 4- or 8-week elective periods.

381 Orthopaedic Surgery (5 or 10)

Kenmore and Staff

Participation in total care program of orthopaedic patients: daily rounds, conferences, seminars. 2 seniors; 4- or 8-week elective periods. V.A. Hosp.

382 Orthopaedic Surgery Research (5 or 10)

Adams

By special arrangement, participation in research projects in orthopaedic surgery. 1 senior; 4- or 8-week elective periods.

391 Extramural Orthopaedic Surgery (5 to 20)

Adams

By special arrangement of the Chairman of the Department, an extramural elective open to seniors for a period of from 4 to 16 weeks.

Otolaryngology

Associate Clinical Professor J.J. McFarland, Jr. (*Chairman*)

Assistant Clinical Professors J.L. Levine, M.E. Krucoff, R.S. Page, Jr., J.A.

Sabri, W.M. Tribble, B.M. Webb, R.L. Fields

Clinical Instructors I.S. Jaffee, R.D. Ralph, H.H.E. Scheidemandel, G.F. Mil-

ler, Jr., R.E. Pumphrey, Jr.

*Required for medical students. Credit is a part of and is assigned after completion of Surgery 304.

***301 Otolaryngology (1)**

Lectures and demonstrations on anatomy, physiology, and diseases of the ear, nose, and throat. (Fall) Staff

380 Otolaryngology (5)

Care of inpatients and outpatients, diagnosis, and therapy; rounds and conferences. 8 seniors; 4-week elective periods. Wash. Hosp. Center (Spring) McFarland

Pathology

Professors T.M. Peery (*Chairman*), W.R. Duryee (*Research—Experimental*), F.N. Miller, Jr., William Newman, J.C. Smith

Clinical Professors L.E. Zimmerman (*Ophthalmic*), J.M. Blumberg, E.B. Helwig (*Dermatologic*), G.H. Reifstein, N.S. Irey, Robert Sauer (*Comparative*)

Professorial Lecturers Mary Matthews, P.D. Olch (*History of Medicine*)

Associate Professors W.L. Marsh, Lois Platt (*Cytology*), Alexander Breslow

Associate Clinical Professors J.S. Howe, V.E. Martens, Theodore Winship, R.E. Palmer, W.J. Jaffurs

Assistant Professors F.S. Jannotta, S.G. Kent, Suzanne Hammersberg (*Medical Technology*), B.C. Zook (*Comparative*)

Assistant Clinical Professors W.F. Enos, Cornelia Hoch-Ligeti, L.W. Fix, Grace Guin, E.H. Zeitler, Marjorie Williams, C.B. Cook, D.R. Parkinson, I.D. Godwin, M.A. Weinberger, Floris Garner (*Comparative*), Gloria Brennan

Special Lecturer L.C. Johnson

115-16 Introduction to Medical Science (1-1)

Marsh, Hammersberg, and Staff

Lectures for medical technology students on physiology, pathology, and medicine to accompany Pathology 119-20. (Academic year—1 hour a week)

117-18 Principles in Medical Technology (4-4)

Marsh, Hammersberg, and Staff

For medical technology students. Theories, principles, sources of error of methods used in clinical chemistry, clinical bacteriology, serology, hematology, clinical microscopy. (Academic year—4 hours a week)

119-20 Medical Technology Laboratory (10-10)

Marsh, Hammersberg, and Staff

Rotation through University Hospital pathology laboratories: hematology and urinalysis, 12 weeks; chemistry, 12 weeks; bacteriology and parasitology, 12 weeks; blood bank, 6 weeks; serology, 4 weeks; tissue pathology, 4 weeks. (35 hours a week for 50 weeks)

***†201 Pathology (8)**

Inflammations, degenerations, malformations, trauma, neoplasms. Pathology of organ systems; correlation with symptoms and physical signs. Staff

* Required for medical students.

† Open to limited number of graduate students, with permission.

Gross and microscopic study of diseased tissues. Case studies. (Fall—12 hours a week)

***202 Diagnostic Conferences (1)**

Smith, Gusack

Case studies demonstrating pathologic significance of major clinical symptoms and physical signs. (Spring—1 hour a week)

***203-4 Clinicopathologic Conferences (0)**

Staff

Case histories presented and differential diagnosis discussed; clinical, laboratory, necropsy findings correlated. (Fall and spring during medical clerkship)

252 Forensic Pathology and Medical Jurisprudence (1)

Miller

Pathology of trauma and of chemical poisons. The physician in relation to the law: legal vs. ethical rights and responsibilities; investigation of death; legal problems in medicine. (Spring—1 hour a week)

253 Medicine in Shakespeare (1)

Miller

Seminars with student and staff presentations covering nine plays of William Shakespeare of medical significance. (Spring—1 hour a week)

254 Medicine in Literature (1)

Miller

Series of discussions with student and staff presentations covering novels, dramas, nonfiction, and poetry of medical significance. (Fall—four 3-hour sessions)

255 An Introduction to Medical Bibliography (1)

Olch

Seminars and workshops on medical library resources, including the National Library of Medicine MEDLARS System, and their use for scholarship and pleasure. Historical monuments of medicine. Nat'l. Lib. of Med. (Fall—four 3-hour sessions)

258 Interpretation of Clinical Laboratory Data (1)

Marsh, Kent

Students will be assigned patients having interesting abnormal test results in clinical laboratories, and will study the patients' medical records in order to evaluate the significance of the laboratory data. Students and staff will discuss these cases in detail at the end of each session. Univ. Hosp. (Fall—four 3-hour sessions)

260 Obstetric and Gynecologic Pathology (1)

Jaffurs

Organ changes in normal and abnormal pregnancy, including both the mother and the fetus. Diseases of female genital system. (Spring—1 hour a week)

†262 Problems in Experimental Cellular Pathology (1)

Duryee

Cytological and biochemical aspects of cellular function in relation to normal and selected pathological conditions. (Spring—1 hour a week)

264 Clinicopathologic Discussions (1)

Smith, Jannotta

Formal clinicopathologic conferences alternating with systematic review of autopsied cases from the medical service. Univ. Hosp. (Spring—1 hour a week)

* Required for medical students.
† Open to limited number of graduate students, with permission.

***266 Comparative Pathology I (1)**

Sauer, Zook

Participation in an autopsy service involving wild animals in captivity. Comparison of diseases in various animal species with those in man. Limited to 4 students. Pathology Lab., Nat'l Zoological Park (Fall—four 3-hour sessions)

***271 Tissue Reactions to Drugs (1)**

Irey

Study of the problems involved in recognizing instances of untoward reaction to therapy. Case presentations. (Spring—1 hour a week)

272 Pathology in Medicine and Surgery (2)

Reifenstein

Survey of current literature, with application of pathology to clinical medicine and surgery. Each student assigned an article a week, for study, written report, and group critique. (Spring—2 hours a week)

274 Medical Pathology (2)

Staff

Study of cases from the necropsy service at University Hospital, evaluating and interpreting gross and microscopic tissue changes and correlating them with clinical data. (Spring—2 hours a week)

***276 Seminars in Pathology (2)**

Peery and Staff

Conferences on current topics in pathology, conducted by and primarily for residents in pathology. Each student teams up with a resident to prepare and present a seminar on a selected topic. Univ. Hosp. (Spring—2 hours a week)

279 Ophthalmic Pathology I (1)

Zimmerman

Basic science aspects of diseases of the eye. (Spring—1 hour a week)

280 Surgical Pathology I (4)

Newman, Winship

Surgical pathology service at University Hospital and Washington Hospital Center. Examining specimens from current surgical cases, correlating with clinical manifestations. Univ. Hosp. and Wash. Hosp. Center (Spring—6 hours a week)

281 Surgical Pathology II (1)

Newman

Review of interesting current surgical cases at University Hospital. Students will review microscopic slides on assigned cases and will participate in joint conferences with residents and staff from the Department of Surgery (and Radiology when indicated). Discussion will include principles of diagnosis and treatment. *Microscopes required.* Univ. Hosp. (Fall—four 3-hour sessions)

282 Ophthalmic Pathology II (3)

Zimmerman

Diseases of the eye as revealed by gross and microscopic examination. Concurrent requisite: Pathology 279. 6 students. Armed Forces Inst. of Path. (Spring—4 hours a week)

***283 Anatomical Pathology Clerkship (5 or 10)**

Staff

Necropsy and surgical pathology service. Prerequisite: Pathology 281. Graduate students receive 5 semester hours of credit for each 4-week period and may receive up to 30 semester hours of credit for 6 months full-time. (Medical students: spring—4 or 8 weeks. Graduate students: fall or spring—as arranged)

* Open to limited number of graduate students, with permission.

- 284 Ophthalmic Pathology III (5)** Zimmerman
Daily participation in service limited to pathology of the eye and its adnexa. 1 senior; 4-week elective periods. Armed Forces Inst. of Path. (Spring)
- 285 Clinical Pathology I (10)** Martens
Selected techniques of clinical chemistry, hematology, bacteriology. Student selects laboratory problem. 4 seniors; 8-week elective periods. Wash. Hosp. Center (Spring)
- 286 Biophysics: Electron Microscopy (10)** Zeitler
Basic electron microscopy; preparation of tissues, alignment procedures, image interpretation. 2 seniors; 8-week elective periods. Armed Forces Inst. of Path. (Spring)
- 287 Clinical Pathology II (5)** Marsh, Breslow
Techniques in the clinical laboratory and interpretation of results, follow-up studies. 1 senior; 4-week elective periods. Univ. Hosp. (Spring)
- 288 Clinical Cytology (5)** Platt
Evaluation of cytologic smears, chiefly vaginal, as a screening procedure in cancer diagnosis. 1 senior; 4-week elective periods. Warwick Bldg. (Spring)
- 290 Clinical and Anatomical Pathology I (5)** Cook
Daily studies of surgical and necropsy pathology, including forensic pathology; clinical pathology projects, including hematology, isotopology, bacteriology. 1 senior; 4-week elective periods. Fairfax Hosp. (Spring)
- 291 Experimental Cell Pathology: Cancer Research (5)** Duryee
Experimental animal tumors; tissue culture, histological and cytological techniques, library assignment. 1 senior; 4-week elective periods. Warwick Bldg. (Spring)
- 292 Experimental Pathology: Enzymatic Changes in Human Tissues (5)** Hoch-Ligeti
Distribution and concentration of lactic dehydrogenase, beta glucuronidase, and their isoenzymes in human tissues; limited participation in routine studies in pathology. Room and board furnished. 2 seniors; 4-week elective periods. V.A. Center, Martinsburg, W.Va. (Spring)
- 293 Clinical and Anatomical Pathology II (5)** Palmer
Participation in departmental activities, including clinical, surgical, and autopsy pathology; medico-legal autopsies. 1 senior; 4-week elective periods. Alexandria Hosp. (Spring)
- 294 Surgical Pathology III (5)** Winship
Preoperative examination of patients with tumors, pathologic examination of excised lesions; teaching conferences. 2 seniors; 4-week elective periods. Wash. Hosp. Center (Spring)
- 295 Comparative Pathology II (5 to 30)** Garner and Staff
For graduate students. Participation in veterinary pathology service, including wild and domestic animals. Prerequisite: Pathology 201. Five semester hours of credit for each 4-week period. Students may receive up

to 30 semester hours of credit for 6 months full-time. Armed Forces Inst. of Path. (Fall or spring)

296 Surgical Pathology IV (5)

Newman

Evaluation of surgical specimens and correlation with clinical status of patient, description of gross and microscopic findings on assigned cases. 2 seniors; 4-week elective periods. Univ. Hosp. (Spring)

297 Dermal Pathology (5)

Helwig

Microscopic conferences, review of current material and study sets. 2 seniors; 4-week elective periods. Armed Forces Inst. of Path. (Spring)

298 Necropsy Pathology (5)

Jannotta

Organ changes in disease, gross and microscopic examinations, preparation of protocols. 2 seniors; 4-week elective periods. Univ. Hosp. (Spring)

299-300 Thesis Research (3-3)

Staff

(Academic year)

398 Advanced Reading and Research (arr.)

Staff

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged)

399 Dissertation Research (arr.)

Staff

Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged)

Pediatrics

Professors R.S. Lourie (*Psychiatry*), F.P. Heald (*Chairman*), R.H. Parrott, Spyros Doxiadis (*Visiting*), S.L. Leikin, J.C. Houck (*Biochemistry*), A.M. Margileth (*Associate Chairman*)

Clinical Professors W.S. Anderson, L.E. Hoeck, W.A. Howard, J.A. Washington, Lois Murphy (*Child Development*), Sydney Ross

Associate Professors L.P. Scott III, Margaret Gutelius, E.V. Soto, Gordon Avery, Wellington Hung, Leon Cytryn (*Psychiatry*), Ruth McKay (*Psychiatry*), Dorothy Huntington (*Research—Child Development*), Rebecca Rieger (*Research—Child Development*), A.F. North, Jr., D.W. Delaney

Associate Clinical Professors T.E. Reichelderfer, William Stark (*Psychiatry*), S.I. Wolf, A.B. Coleman, Bennett Olshaker (*Psychiatry*), Sara Saltzman (*Child Development*), S.C. Southard

Assistant Professors J.R. Puig, Nasser Movassaghi, C.A. Rigg, W.H. Barton (*Psychiatry*), L.W. Perry, C.M. Berlin, Jr., L.M. Greenberg (*Psychiatry*), S.A. Fagen (*Research—Child Development*), Rona Fisher (*Research—Child Development*), Elsa Greenberg (*Research—Child Development*), Ann Lodge (*Research—Child Development*), Lovisa Tatnall (*Research—Child Development*), A.C. Chung (*Biochemistry*), H.B. Richardson, Jr., Shui-chin Chen, G.P. August, E.N. Kraybill, M.W. Werthmann, Jr.

Assistant Clinical Professors Mabel Grosvenor, R.E. Martin, J.H. Peacock, Jr., Mary Sartwell, C.F. Stiegler, H.G. Clark, Adrian Recinos, Jr., C.R. Webb, G.J. Cohen, Stephen Mourat (*Psychiatry*), A.P. Simopoulos, Erwin Friedman

(*Psychiatry-Psychology*), A.J. Modlin, Belinda Straight (*Psychiatry*), A.E. Marans (*Psychiatry*), Elma Denham (*Psychiatry*), M.S. Glatt (*Psychiatry*), Mary Robinson (*Child Development*), D.H. McKnew, Jr. (*Psychiatry*), P.C. Brunschwyler, L.A. Cove, D.P. Devaris (*Psychiatry*), Milton Engel
Instructors S.I. Granger, Beneta Peacock, Sharon Kempf (*Child Development*), Anne Fletcher, Mary Flumerfelt (*Psychiatry*), Shirley McMahon, R.R. Meers (*Psychiatry*), Ruth Stein, S.G. Werner, Jane Todaro
Clinical Instructors H.H. Diamond, R.H. Mitchell, R.O. Warthen, Emilie Black, R.H. Anderson, W.G. Preisser, H.T. Yates, Roger Bergstrom, Mary Fox, S.Z. Goldblatt, Hilary Millar (*Psychiatry*), Harold Plotsky (*Psychiatry*), Jean Lockhart, G.W. Daisley, Jr., Agnes Schweitzer, G.W. Hardman, Jr., H.D. Knox, Frances Min, B.H. Ong, H.R. Gold, V.L. Guandolo, Iradj Mahdavi, J.L. Chamberlain III, Leonard Lefkowitz, K.G. Kassebaum, H.W. Rice, D.A. Young
Special Lecturers G.A. Balfour, J.A. Bottigione, C.J. Schulte III

*301 Pediatrics (2)

Heald and Staff

Prenatal, perinatal, postnatal factors influencing growth and development of the infant. Social, emotional, physical growth of infant and child. (Spring)

*303 Pediatric Clerkship (10)

Heald and Staff

Full-time, including night and holiday admissions, as part of resident team; ward rounds; work in outpatient department and specialty clinics under staff supervision; child psychiatry and child guidance, lectures, clinical conferences, grand rounds. Children's Hosp. (Annual, continuous 8-week rotation)

380 Clinical Pediatrics (5)

Margileth, Puig

Full-time, including night and holidays, as part of resident team; wards, outpatient department, and specialty clinics under staff supervision. Participation in diagnostic studies, therapeutic procedures, rounds, and conferences. 4 seniors; 4-week elective periods. Children's Hosp. (Spring)

381 Pediatric Allergy (10)

Howard

Introduction to pediatric allergy, clinics and wards, some experience in experimental techniques and preparation of extracts. 1 senior; 8-week elective periods. Children's Hosp. (Spring)

382 Pediatric Radiology (5)

LoPresti

Diagnostic and therapeutic radiology, diagnostic procedures. 2 seniors; 4-week elective periods. Children's Hosp. (Spring)

384 Newborn and Premature (10)

Ballard and Staff

Clinical studies in newborn care emphasizing hematologic problems and congenital malformations; daily rounds, conferences, research studies in cytogenetics. 2 seniors; 8-week elective periods. Univ. Hosp. (Spring)

385 Child Psychiatry (5)

Lourie

Diagnostic and follow-up studies on inpatients and outpatients; rounds, conferences, seminars; visits to related community facilities. 2 seniors; 4-week elective periods. Children's Hosp. (Spring)

386 Pediatric Hematology (5)

Leikin

Clinical and laboratory studies of infants and children with hematologic disorders, bone marrow examinations, exchange transfusions. 1 senior; 4-week elective periods. Children's Hosp. (Spring)

387 Clinical Pediatrics (5)

Soto

Care of newborn and children on inpatient basis; diagnostic studies, therapy; assigned reading. 2 seniors; 4-week elective periods. Fairfax Hosp. (Spring)

389 Pediatric Cardiology (5)

Scott, Perry

Physical diagnosis of congenital and acquired heart diseases, interpretation of electrocardiograms and vectorcardiograms, cardiac catheterizations. Prerequisite: 1 month clerkship in medicine. 2 seniors; 4-week elective periods. Children's Hosp. (Spring)

390 Birth Defects Clinic (1)

Staff

Outpatient service for infants and children with various congenital defects. 2 juniors. Children's Hosp. OPD (Fall—1 month)

391 Pediatric Research (5 or 10)

Houck, Heald, and Staff

Pathophysiology and molecular biology of human growth and development. 2 seniors; 4- or 8-week elective periods. Children's Hosp. (Spring)

392 Adolescent Medicine Clerkship (5 or 10)

Heald, Riggs

Study of the normal developmental problems of adolescence. Experience in the medical care of adolescents. 2 seniors; 4- or 8-week elective periods. Children's Hosp. (Spring)

393 Nursery Rounds and Nursery

Avery, Fletcher, Kraybill

Follow-up Clinic (1)

(Formerly Nursery Grand Rounds)

Rounds on selected nursery patients, followed by observation and participation in a multiple-discipline clinic providing total medical care in the first year of life to infants who had severe illness as newborns. 1 junior. Children's Hosp. (Fall—1 month)

394 Clinical Pediatrics (1)

Heald and Staff

Two clinics—3 or 4 hours each session, with one-hour periods of case presentations, adolescent dermatology and diabetic clinics, pathology (mortality review), and X-ray conferences. 3 juniors. Children's Hosp. (Fall—1 month)

395 Adolescent Medicine (1)

Riggs

Participation in an active outpatient service for adolescents. Case presentations; renal, neurological, and gastroenterological diseases. 2 juniors. Children's Hosp. (Fall—1 month)

396 Mental Retardation (1)

Cytryn, Friedman

Diagnostic evaluation of mentally retarded children and adolescents. Didactic lectures concerning various aspects of mental retardation. 2 juniors. Jewish Foundation for Retarded Children (Fall—1 month)

397 Pediatric Intensive Care (1)

Berlin

(Replaces Pediatrics 397 Epidemiology of Childhood Diseases (2))

Patients with acute medical/surgical problems on the intensive care ward will be used as a stimulus for students to learn pediatric pathophysiology.

Monitor equipment and tests, including electrocardiogram, respirators, blood gases, fluids, and electrolytes. 2 juniors. Children's Hosp. (Fall—1 month)

- 398 **Comprehensive Care Elective (1)** Hinckley*
Observing both sick and well child care as it is administered in a comprehensive setting. 2 juniors. Children's Hosp. (Fall—1 month)

- 400 **Nursery Follow-up Clinic and Conference (1)** Avery, Fletcher, Kraybill, Ballard
Observation and participation in a multiple-discipline clinic providing total medical care in the first year of life to infants who had severe illness as newborns. Staff conference where each patient is discussed from medical nursing, and social service viewpoints. 2 juniors. Children's Hosp. (Fall—1 month)

Pharmacology

Professor H.G. Mandel (Chairman)
Professorial Lecturers B.B. Brodie, F.E. Hahn
Associate Professors V.H. Cohn, Jr., Paul Mazel, K.S. Kim (Research), S.E. Fabro (Research), W.R. Jondorf (Research)
Assistant Professors G.A. Hahn (Research), Philip Klubes (Research), J.A. Straw, Barbara Roth-Schechter
Instructors Glenna Fitzgerald, Sau-Wah Kwan

- †201 **Pharmacology (8)** Mandel and Staff
Lectures, laboratory, conferences on interaction of drugs and biological systems as a basis for rational therapy of disease. Prerequisite: biochemistry and physiology, or approval of Department. (Fall)

- 203 **Fundamental Principles of Pharmacology (2)** Staff
Basic principles of pharmacology, including drug-receptor interactions, structure activity relationships, pharmacokinetics, membrane phenomena, cellular control mechanisms, drug toxicity. (Fall)

- 252 **Seminar: Clinical Pharmacology (2)**
Problems in therapeutics; emphasis on drugs used in treatment of cardiovascular and infectious diseases. Participation in discussions and preparation of lectures. Enrollment limited. (1970-71 and alternate years: spring)

- 254 **Frontiers in Pharmacology (1)** Mandel and Staff
For medical and graduate students. Recent advances and fields of research in pharmacology. Most of the material presented by laboratory scientists from neighboring institutions. (Spring)

- 256 **Molecular Pharmacology (2)** F. Hahn
For medical and graduate students. Current theory on action of drugs, especially chemotherapeutic agents, at molecular level. Effect of drugs on

* Dr. Hinckley is Director of Comprehensive Health Care Clinic at Children's Hospital.
† Required for medical students; open to graduate students

biosynthetic processes of the cell with respect to DNA, messenger RNA, transfer RNA, ribosomes, protein, cell wall, and intermediary metabolites. Factors which alter action of drugs, such as drug interactions and resistance. (Spring)

258 Cancer Chemotherapy (1)

Mandel and Staff

For medical and graduate students. Mechanisms by which drugs inhibit the growth of tumor cells. (1970-71 and alternate years: spring)

259 Developmental Pharmacology (1)

Fabro

For medical and graduate students. Lectures, seminars, conferences. Teratogenic actions of drugs, pharmacological principles which apply during prenatal and perinatal development. (1971-72 and alternate years: spring)

260 Endocrine Pharmacology (1)

Kim

For medical and graduate students. Lectures and seminars on recent advances in the pharmacology and mechanism of action of various hormones. (1971-72 and alternate years: spring)

264 Pharmacological Research (6)

Staff

Metabolism of narcotic and nonnarcotic analgesic agents, metabolism and mechanism of action of antibiotics and anticancer drugs, protein synthesis, molecular pharmacology, pharmacogenetics, adaptation in drug metabolism. 3 sophomores. (Spring—2 full days a week)

267 Pharmacological Research (arr.)

Staff

For graduate students. Content differs each time course is offered; may be repeated once for credit toward a Master of Science degree. (Fall and spring)

269 Pharmacology Seminar (1)

Staff

For graduate students. Recent advances in pharmacology. Content differs each time course is offered, may be repeated once for credit toward a Master of Science degree. (Fall and spring)

272 Physiological Disposition of Drugs (3)

Cohn

For medical and graduate students. Fate of drugs in biological tissue. Absorption, distribution, chemical alteration, excretion of drugs, physical, chemical, and biological factors affecting these processes. Limited to 20 students. Prerequisite: Pharmacology 201. (1971-72 and alternate years: spring)

275-76 Advanced Topics in Pharmacology I-II (1-1)

Staff

Lectures and seminars on advances in mechanisms of drug action, pharmacology of new drugs, theoretical aspects of pharmacology, laboratory techniques. (1971-72 and alternate years—academic year)

277-78 Advanced Topics in Pharmacology III-IV (1-1)

Staff

Continuation of Pharmacology 275-76. (1970-71 and alternate years—academic year)

279 Special Topics in Pharmacology (arr.)

Staff

Selected aspects of drug action. Content differs each time course is offered; may be repeated once for credit toward a Master of Science degree. (Fall and spring)

281 Physiological Techniques in Pharmacology— Mazel, Straw
Lecture (2)

For medical and graduate students. Physiological techniques for obtaining information on mechanism and site of action of pharmacological agents. Limited to 20 students. Pharmacology 281 may be taken without 282. Prerequisite: Pharmacology 201. (1971-72 and alternate years: spring)

282 Physiological Techniques in Pharmacology— Mazel, Straw
Laboratory (2)

Accompanies Pharmacology 281. Prerequisite: Pharmacology 201. Prerequisite or concurrent registration: Pharmacology 281. (1971-72 and alternate years: spring)

283 Biochemical Techniques in Pharmacology (arr.) Cohn

For graduate students. Lectures and laboratory. Theory and practice of modern biochemical techniques applicable to study of metabolic fate and mechanism of action of drugs. Prerequisite: Pharmacology 201. (As arranged)

285 Readings in Pharmacology (1) Staff

For medical students. Assigned reading and preparation of report. (Fall and spring)

286 Research in Pharmacology (arr.) Staff

For medical students. Participation in experimental studies in pharmacology, particularly bacterial chemotherapy, cancer chemotherapy, or drug metabolism. (Fall and spring)

295 Reading and Research (arr.) Staff

Independent study for students preparing for the Master of Science degree. May be repeated for credit. (Fall and spring—as arranged)

299-300 Thesis Research (3-3) Staff

Required of Master of Science candidates. (Academic year—as arranged)

398 Advanced Reading and Research (arr.) Staff

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit. (Fall and spring—as arranged)

399 Dissertation Research (arr.) Staff

Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged)

Physical Medicine and Rehabilitation

Clinical Professor Morton Seidenfeld (*Clinical Psychology*)
Associate Professors John Watt, Jr. (*Acting Chairman*), A.F. Mastellone
Associate Clinical Professors Inez Hill, P.A. Klieger

Assistant Professor Gloria Eng

Assistant Clinical Professors Giuseppe Balsamo, A.B.C. Knudson, F.L. Wenger.

G.J. Thorpe

***301 Physical Medicine (1)**

Staff

Lectures and demonstrations on various techniques. Clinical applications of physical medicine and rehabilitation integrated with teaching of associated medical and surgical specialties. (Spring)

352 Physical Medicine and Rehabilitation (5)

Watt

Participation in departmental procedures, examination and evaluation of patients requiring rehabilitation. 3 seniors; 4-week elective periods. Univ Hosp. (Spring)

380 Physical Medicine (2)

Watt

Participation in clinical service for diagnosis and treatment of neuromuscular, skeletal, visceral disorders by physical means. 4 juniors. (Fall)

Staff

395 Research (arr.)

(Fall)

Physiology

Professors C.S. Tidball (*Chairman*), R.A. Kenney

Professorial Lecturers Leonard Laster, K.R. Coburn

Associate Professors Elizabeth Tidball (*Research*), Marie Cassidy, R.P. Kernan (*Visiting*)

Associate Professorial Lecturers P.G. Nelson, R.J. Podolsky, W.A. Hagins, R.H. Adamson

Assistant Professors Elizabeth Stephenson, M.J. Jackson

Assistant Professorial Lecturer W.L. Haskell

Instructor R.A. Lavine

Special Lecturers L.L. Langley, H.J. Zimmerman

Departmental prerequisite: Physiology 201 is prerequisite to all courses in Physiology numbered above 201.

191 Selected Topics in Human Structure and Function (3)

Kenney

Lecture (2 hours), laboratory (1 hour). Structure and functional basis of physiology. A required course for graduate students who have not had Anatomy 201 or equivalent. Content of this course is on the undergraduate level; students may receive graduate credit on completion of additional work as prescribed by the instructor. Prerequisite: Biological Sciences 11-12 or equivalent and consent of instructor. Open to Columbian College of Arts and Sciences students only with the approval of the student's major adviser. (Fall)

* Required for medical students

***201 Physiology (8)**

Staff

Lecture (8 hours), laboratory (6 hours), conference (1 hour). Cellular, organ system, and applied mammalian physiology. Prerequisite for graduate students: Anatomy 201 or Physiology 191, or equivalent; Biochemistry 201 or 221-22 (Biochemistry 222 may be taken concurrently); or consent of Chairman of Department. Nonmedical students please note that the first meeting of the course occurs one week before the start of University campus classes. Open to Consortium students only with permission of Department Chairman. (Spring)

221 Seminar (1)

Stephenson

Staff and student presentations from literature. Present work discussed, experimental design and scientific deduction evaluated. Topics to be announced. Prerequisite: a reading knowledge of French or German. Content differs each time course is offered, may be repeated for credit. (Fall and spring)

251 History of Medicine (1)

E. Tidball

Survey of the great contributors to physiology and medicine in the context of the times in which they lived and worked. (Fall)

252 Physiological Basis of Sexuality (1)

Staff

Conference 1 hour a week. Human reproduction, neonatal changes, contraception, sterility: their implications on patient counseling. (Fall)

253 Clinical Applications of Physiology (1)

C. Tidball

Conference 1 hour a week. Emphasis on acid-base and fluid-balance physiology and its relation to clinical problems. (Not offered 1970-71)

256 Aerospace Physiology (1)

Coburn

Conference 1 hour a week. Discussion of physiological problems involved in aviation and space technology. (Fall)

261 Gastrointestinal Physiology (2)

Staff

Lecture or conference 2 hours a week. Physiological approach to such clinical problems as peptic ulcer, malabsorption, ulcerative colitis, hepatitis, and others. (Fall)

262 Cardiovascular Physiology (2)

E. Tidball

Lecture or conference 2 hours a week. An overview of cardiovascular physiology at an advanced level. (Not offered 1970-71)

263 Endocrine Physiology (2)

Jackson

Lecture or conference 2 hours a week. Basic physiology underlying clinical derangements involving abnormal endocrine function. (Fall)

264 Basic Science in Clinical Medicine (2)

(Formerly Advanced Physiology of Metabolism)

Conferences on basic and clinical research which have brought new understanding to disease states characterized by inborn errors of metabolism. (Fall)

* Required for medical students, open to graduate students

- 267 Renal Physiology (2)** Kenney
Lecture or conference 2 hours a week. An overview of renal physiology at an advanced level. (Not offered 1970-71)
- 271 Electronic Instrumentation (3)** Lavine
Lecture (2 hours), laboratory (2 hours). Fundamentals of electronics and their application to the measurement of physiological phenomena. Prerequisite: Mathematics 31; Physics 1, 2; and consent of instructor (Fall)
- 272 Mammalian Radiophysiology (1)** Jackson
Lecture or conference 1 hour a week. Basic physiology of radiation lethality (Fall)
- 273 Investigative Electron Microscopy (3)** Cassidy
Lecture (2 hours), laboratory as arranged. Application of electron microscopy to biological investigative studies. Limited registration. Prerequisite: Anatomy 261 or equivalent. Admission by permission of instructor. (Fall)
- 281 Experimental Gastrointestinal Physiology (5)** C. Tidball
2 seniors; 4-week elective periods. School of Medicine (Spring)
- 282 Experimental Cellular Physiology (5)** Cassidy
2 seniors; 4-week elective periods. School of Medicine (Spring)
- 283 Experimental Neuroendocrinology (5)** E. Tidball
2 seniors; 4-week elective periods. School of Medicine (Spring)
- 286 Experimental Renal Physiology (5)** Kenney
2 seniors; 4-week elective periods. School of Medicine (Spring)
- 287 Experimental Electron Microscopy (5 or 10)** Cassidy
2 seniors; 4- or 8-week elective periods. School of Medicine (Spring)
- 288 Experimental Muscle Physiology (5 or 10)** Stephenson
2 seniors; 4- or 8-week elective periods. School of Medicine (Spring)
- 289 Experimental Nutrition and Metabolism (5)** Jackson
2 seniors; 4-week elective periods. School of Medicine (Spring)
- 290 Experimental Neurophysiology (5)** Lavine
2 seniors; 4-week elective periods. School of Medicine (Spring)
- 295 Research (arr.)** Staff
By special arrangement with individual Staff members. Approximately 4 clock hours in the laboratory for each semester hour credit. Content differs each time course is offered, may be repeated for credit. (Fall and spring)
- 298 Comprehensive Physiology (2)** Staff
Guided review of selected areas of Physiology appropriate to the student's graduate program. This course satisfies the requirements for the Master's Comprehensive Examination, the Field Examination for doctoral students minoring in physiology, and Part I of the Cumulative General Examination.

tion in Physiology. Prerequisite or concurrent registration: Physiology 221. (Fall—as arranged)

299-300 Thesis Research (3-3)

Staff

396 Advanced Reading and Research (1 or 2)

Staff

Limited to students preparing for the Doctor of Philosophy general examination. Tutorial literature survey of a subfield of Physiology and of pertinent areas of the candidate's minor field. This course satisfies the requirement for Part II of the Cumulative General Examination in Physiology. (Fall and spring—as arranged)

398 Development of Dissertation Problem (1 or 2)

Staff

Limited to students preparing for the Doctor of Philosophy general examination. Preparation for written and oral presentation of dissertation problem. This course satisfies the requirement for Part III of the Cumulative General Examination in Physiology. (Fall and spring—as arranged)

399 Dissertation Research (arr.)

Staff

Limited to Doctor of Philosophy candidates. May be repeated for credit. (Fall and spring—as arranged)

Psychiatry

Professors Leon Yochelson (*Chairman*), J.E. Rankin

Clinical Professors D.C. Cameron, T.D. Noble, Sidney Berman, Morris Kleinerman, M. DeG. Ruffin, Norman Taub, Samuel Yochelson (*Criminal Behavior*), D.L. Bazelon (*Socio-legal Aspects*), Leon Ferber, P.H. Gray, Paul Chodoff, H.A. Meyersburg, F.N. Waldrop, Stanley Yolles, Harold Weiner (*Experimental Psychology*), G.C. Salmoiraghi (*Neurophysiology and Neuropharmacology*), Harvey Resnick

Associate Professor Angelo D'Agostino

Associate Clinical Professors H.P. Laughlin, M.L. Adland, Anna Todd, I.H. Kaiser, C.T. Bever, David Fden, Margaret Mercer (*Clinical Psychology*), S.I. Szara (*Psychopharmacology*), Hans Weil-Malherbe (*Neurochemistry*), J.G. Rubin, E.S. Fleming, Joseph Abrahams, R.M. Greenberg, W.D. Kehne, A.M. Drummond, J.L. Sheridan, E.I. Kushner, J.H. Yacoubian, Jack Durell, John Katka, H.B. Lehman, J.T. English, I.H. Marill, Bertram Brown, T.D. Reynolds (*Experimental*), P.S. Weisberg, Calvin Frederick (*Medical Psychology*), L.D. Robinson

Assistant Professors H.M. Grigorian, R.M. Coleman

Assistant Clinical Professors Sarah Tenenblatt, J.B. Chassan (*Biostatistics*), R.A. Rogers, J.A. Farrell, N.C. Rintz, F.G. Hilkert, Susannah Gourevitch (*Psychology*), I.D. Milowe, W.C. Johnson, R.A. Frank, Leslie Schaffer, A.H. Kiracofe, Jr., T.M. Mackenzie, R.N. Butler, J.H. Menetrez, Christine Kehne, M.A. Woodbury, W.H. Young, Jr., J.H. Bouma, B.L. Burris, W.J. Stockton, Spencer Gordon, Jr., Marjorie Creelman (*Psychophysiology*), C.C.H. Cullander, D.A. Lanham, J.T. Quattlebaum, W.L. Taylor (*Experimental Psychology*), D.L. Tippet, Archibald Ward, Jr. (*Sociology*), W.G.

Tompkins, Frances Thomas (*Social Work*), Seymour Rabinowitz, D.S. Sprague, Roger Peele, S.L. Auster, Gertrude Cotts, Brian Crowley, Margaret Garrett, H.A. Greenberg, H.A. Hoffman, R.A. McElroy, B.P. McKaig, J.M. Post, William Davidson, J.A. Schoettler, Stephen Weissman, Pearl Holly, R.E. Wittenberg, J.L. Evans, D.D. Cowell, Larry Dizmang, Barton Pakull, C.R. Gray, M.J. Chalick, Geraldine Schaeffer, R.T. Lewit
Instructors J.L. Mabon (*Social Work*), R.A. Blum
Clinical Instructors W.H. Dobbs, W.A. Hamman, G.D. Legler, D.G. Lipman, S.A. Savitz, J.W. Voell, W.J. Polk
Special Lecturers W.E. Barton, Reza Arasteh, Julius Hoffman

- *301 **Psychiatry in the Practice of Medicine** (4) L. Yochelson and Staff
 Normal personality development, psychopathology, psychosomatic disturbances, medical interviewing. Descriptions and clinical demonstration of psychoneuroses, character disorders with presentation of their causes, courses, and treatment. (Spring)
- *302 **Clinical Clerkship** (5) Rankin and Staff
 Supervised examination, diagnosis, treatment of outpatients and inpatients at University and St. Elizabeths hospitals; case conferences, seminars on psychiatric referral, "psychiatric" drugs, community resources. Psychiatry in general practice stressed. (Fall and spring)
- 382 **Clinical Psychiatry** (5) Waldrop
 Clinical care of patients hospitalized for emotional and mental disturbances. 2 seniors; 4-week elective periods. St. Elizabeths Hosp. (Spring)
- 384 **Geriatric Psychiatry** (5) Waldrop
 Care and rehabilitative efforts with elderly inpatients with psychiatric and other incapacities. 1 senior; 4-week elective periods. St. Elizabeths Hosp. (Spring)
- 385 **Schizophrenic Reactions** (5) Bullard
 Psychotherapy and ward management of schizophrenic patients. 2 seniors; 4-week elective periods. Chestnut Lodge, Rockville, Md. (Spring)
- 386 **Psychiatric Research** (5) Waldrop
 Research programs involving clinical and experimental investigations of human behavior. 2 seniors; 4-week elective periods. St. Elizabeths Hosp. (Spring)
- 387 **Clinical Psychiatry** (5) Rankin
 Care of inpatients and outpatients; diagnostic evaluations; individual and group psychotherapies, somatic therapies. 1 senior; 4-week elective periods. Univ. Hosp. (Spring)
- 388 **Research: Chronic Patient** (10) Meyersburg
 Research into social, anthropological, psychological factors influencing long-term care of patients with chronic diseases. 2 seniors; 8-week elective periods. Univ. Hosp. (Spring)

- 390 Research: Psychiatric Aspects of Criminal Behavior (5)** S. Yochelson
Social, anthropological, psychological factors producing criminal behavior.
2 seniors; 4-week elective periods. St. Elizabeths Hosp. (Spring)
- 391 Research: Constitutional Psychiatry (10)** S. Yochelson
Comatotypy, genetics, encephalography, sensory deprivation; emphasis on
the criminal. 2 seniors; 8-week elective periods. St. Elizabeths Hosp.
(Spring)
- 392 Administrative Psychiatry (10)** Harris
Apprenticeship to administrator of large public mental hospital. St. Elizabeths Hosp. (Spring)
- 393 Psychopharmacology (1)** Szara
Social and personal factors in drug response. 20 juniors. St. Elizabeths Hosp. (Fall—1 month)
- 394 Marital-Premarital Counseling (1)** Mackenzie
Counseling techniques for the physician. 16 juniors. (Fall—1 month)
- 395 Neurophysiology and Neuropharmacology (1)** Salmoraghi
(Formerly Psychotherapy (2))
20 juniors. St. Elizabeths Hosp. (Fall—1 month)
- 396 Psychiatry in the Medical Specialties (1)** Drummond, Bever
Common psychiatric problems in general practice of medicine and in
surgical specialties. 16 juniors. (Fall—1 month)
- 397 Introduction to Psychoanalytic Thought (1)** Marill
Basic course in Freudian theory. 8 juniors. (Fall—1 month)
- 398 Comprehensive Rehabilitation (1)** Tompkins, Frank
Participation in psychiatric evaluation of physically disabled patients on
an 18-bed unit. Individual supervision will be provided and the student
will participate in comprehensive medical conferences. 5 juniors. (Fall
—1 month)

Radiology

Professor W.W. Stanbro (Chairman)
Professorial Lecturer J.M. LoPresti (Pediatrics)
Associate Professors C.F. Murphy, W.J. Nelson
Associate Clinical Professors H.J. Kicherer, John Maier, R.M. Caulk, C.W.
Boyer, Jr., A.C. Wyman, D.B. Sodde (Nuclear Medicine), H.M. Hagen
Assistant Professors W.B. McAvoy, Richard Granke, Wei-Rang Fu
Assistant Clinical Professors Charlotte Donlan, S.R. Bersack, H.I. Berman,
Bela Gondos, J.B. Johnston, Jr. (Radiobiology), Marion Faris, Zeki Erim,
G.A. Solack
Clinical Instructors George Tievsky, U.V. Wilcox II, C.M. Weber, M.A.
Thomas, James Burwell, R.D. Cornell, S.J. Kurzbard

***301 Radiology (1)**

Staff

X-ray production, methods of examination, normal and pathological X-ray findings of the various body systems, special studies, introduction to radiation therapy and radioisotopes. (Spring)

380 Radiology (5)

Murphy

Each student works with all department physicians sequentially. Daily film conferences. Each student discusses one diagnostic subject in depth, using films from the teaching file. All attend scheduled department conferences. 6 seniors; 4-week elective periods. Univ. Hosp. (Spring)

381 Diagnostic and Therapeutic Radiology (5)

Schumacher†

Observation in fluoroscopic procedures and participation in film reading sessions; observation of techniques and rationale of radiation therapy. 2 seniors; 4-week elective periods. Wash. Hosp. Center (Spring)

382 General Radiology (5)

Kabakeris‡

Participation with the radiologist in diagnosis and therapy. Study in depth of approved subject. Room and board furnished. 1 senior; 4-week elective periods. V.A. Center, Martinsburg, W.Va. (Spring)

Surgery

Professors Brian Blades (*Chairman*), C.T. Klopp (*Cancer*), G.S. Letterman (*Plastic*), P.C. Adkins (*Associate Chairman*), J.G. Randolph (*Pediatrics*), E.A. Gould

Clinical Professors W.S. McCune, V.M. Iovine, Alec Horwitz, G.A. Higgins, Jr.

Associate Professors H.C. Pierpont, T.C. Alford, D.H. Glew, Jr., Don Wenger.

J.E. McClenathan, P.E. Shorb, Jr., N.T. Tsangaris, J.A. Dowling

Associate Clinical Professors J.R. Thistlethwaite, D.C. Wherry, Maxine Schur-

ter, S.G. Mead (*Oral*), C.W. Hughes, J.H. Baugh, N.P.D. Smyth, Leon

Gerber

Assistant Professors Allan Hall, J.R. Lilly

Assistant Clinical Professors L.B. Burk, Jr., William Ferguson, J.M. Keshishian,

J.J. Weinstein, Isabella Harrison, J.T. Estes, Ernst Bremer, F.B. Brandt, J.W.

Canter, J.B. Harrell, N.H. Isaacson, L.R. Perna, S.M. Kirson, Fernando

Sacasa (*Oral*), M.W. Wolcott, T.M. Wright, Yeong-Cheol Koh, R.D. Shapiro

(*Oral*)

Instructor D.R. Norman

Clinical Instructors J.F. Conlon (*Oral*), B.G. Brown, J.H. Sager, Gerald Ingua-

giato, J.E. Peterson, Charles Rickerich, J.R. McClelland, G.E. White, Sheldon

Holen (*Periodontics*), C.A. Silva, E.A. Lamm

Special Lecturer D.F. Lynch (*Oral*)

***301 Lectures in Surgery (2)**

Staff

***303 Clinical Clerkship I (10)**

Staff

Eight weeks at University Hospital.

* Required for medical students.

† Dr. Schumacher is connected with the Washington Hospital Center.

‡ Dr. Kabakeris is Radiologist at the V.A. Center, Martinsburg, West Virginia.

- *304 Clinical Clerkship II (5)** Staff
Four-week extension of Clinical Clerkship I at D.C. General and V.A. hospitals.
- *305 Emergency Room and Anesthesia (5)** Staff
Four-week clerkship with experience in University Hospital and Clinic. Seniors. (Fall and spring)
- 380 General Surgery I (5)** Iovine
Participation in general care of surgical patients; assigned reading. 1 senior; 4-week elective periods. Univ. Hosp. (Spring)
- 381 General Surgery II (5)** McCune
Participation in general care of surgical patients, assigned reading, experimental surgery for pancreatic disease. 2 seniors; 4-week elective periods. Univ. Hosp. (Spring)
- 382 Head and Neck Surgery (5)** Klopp
Study of new patients and follow-up of treated cases, minor surgical procedures, observation of operating room procedures; assigned reading. 1 senior; 4-week elective periods. Univ. Clinic (Spring)
- 383 Thoracic Surgery Research (5)** Blades, Adkins
Basic principles of research in thoracic surgery; assigned reading. 2 seniors; 4-week elective periods. Univ. Hosp. (Spring)
- 385 Experimental Surgery I (10)** Glew
Participating in existing surgical research projects, assigned reading, experimental operative procedures. 2 seniors, 8-week elective periods. Univ. Clinic (Spring)
- 386 Experimental Surgery II (5 or 10)** Pierpont
Participation in surgical research projects, assigned reading, experimental operative procedures. 3 seniors, 4- or 8-week elective periods. Univ. Clinic (Spring)
- 387 General Surgery III (5)** Thistlethwaite
Supplemental clerkship experience in surgery rounds, diagnostic studies, operational experience, preoperative and postoperative care, conferences and seminars. 2 seniors; 4-week elective periods. D.C. Gen. Hosp. (Spring)
- 389 Plastic Surgery (5)** Letterman
Basic aspects of plastic and reconstructive surgery; collateral reading. 1 senior; 4-week elective periods. Univ. Hosp. (Spring)
- 390 General Surgery IV (5)** Hughes
Student participation in total patient care, including operative procedures on three separate surgical sections and a peripheral vascular section. Daily ward rounds, weekly grand rounds, conferences, and seminars. Both clinical and basic sciences are available. 3 seniors; 4-week elective periods. Walter Reed Gen. Hosp. (Spring)

391 General Surgery V (5)

Higgins

Participation in total care program of surgical patients; daily rounds, conferences, seminars. 4 seniors; 4-week elective periods. V.A. Hosp (Spring)

393 General Surgery VI (10)

Hall

Surgical care program in a community hospital; emergency room service, including major trauma; pediatric surgery. 4 seniors; 8-week elective periods. Fairfax Hosp. (Spring)

394 Pediatric Surgery (5)

Randolph

Participation in an active, closely supervised surgical service for infants and children, including congenital defects, cardiac surgery, trauma, and neoplasms. Diagnostic studies, preoperative and postoperative care, operating room procedures. 3 seniors; 4-week elective periods. Children's Hosp. (Spring)

395 Experimental Surgery III (2)

Glew

Participation in existing surgical research projects, assigned reading, experimental operative procedures. 2 juniors. Univ Clinic (Fall)

399 Disaster Medicine (1)

Pierpont

Lectures and demonstrations showing management of mass casualties resulting from natural and unusual causes, including the effects of biologic warfare and nuclear explosions. Sophomores. (Fall)

Urology

Professor L.R. Culbertson (Chairman)

Clinical Professor E.E. Ferguson

Associate Clinical Professors W.D. Jarman, F.T. Reuter

Assistant Clinical Professors Gilbert Ottenberg, G.R. MacDonald, H.A. Goldberg, W.D. Oldham, R.C. Rhame

Clinical Instructors H.D. Wolff, Jr., H.P. Dorman, John Kenealy, F.P. Chiaramonte, George Dudas, H.J. Klapproth, R.E. Ware, W.L. Banfield, I.S. Young, Chalon Rodriguez, E.H. Soifer

***301 Urology (1)**

Culbertson and Staff

Covers entire field of urology including diagnosis, treatment, and morbid pathology. (Fall)

380 Clinical Urology I (5)

Reuter

Instruction in outpatient and diagnostic urology, including cystoscopy and radiographic procedures. 1 senior, 4-week elective periods. Univ. Hosp. (Spring)

381 Clinical Urology II (5)

Culbertson

Observation of urologic conditions and procedures for diagnosis and treatment, radiologic and pathologic studies, endoscopy and surgery.

* Required for medical students

collateral reading, weekly staff conference. 2 seniors; 4-week elective periods. Univ. Hosp. (Spring)

382 Clinical Urology III (5)

Culbertson

Observation of urologic conditions and procedures for diagnosis and treatment, radiologic and pathologic studies, endoscopy and surgery, collateral reading, weekly staff conference. 2 seniors, 4-week elective periods. V.A. Hosp. (Spring)



THE UNIVERSITY

HISTORY AND ORGANIZATION

THE GEORGE WASHINGTON UNIVERSITY had its beginning in 1821 as The Columbian College in the District of Columbia. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University. The debt of the University to George Washington whose name it bears is an intangible one.

George Washington, as President and as private citizen, had urgently insisted upon the establishment of a National University in the Federal City. There he hoped that, while being instructed in the arts and sciences, students from all parts of the country would acquire the habits of good citizenship, throwing off local prejudices and gaining at first hand a knowledge of the practice, as well as the theory, of republican government. To further the materialization of his hopes, Washington left a bequest of fifty shares of The Potomac Company "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." The Congress never extended "a fostering hand." The Potomac Company passed out of existence, and Washington's bequest became worthless.

Fully conscious of Washington's hopes, but motivated primarily by a great missionary urge and the need for a learned clergy, a group of dedicated ministers and laymen sponsored a movement for the establishment of a college in the District of Columbia. Inspired largely by the zeal and energy of the Reverend Luther Rice, they raised funds for the purchase of a site and petitioned Congress for a charter. After much delay and amendment, Congress granted a charter which was approved by President Monroe on February 9, 1821. To safeguard the College's nonsectarian character it provided "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages thereof, for or on account of his sentiments in matters of religion."

During the entire time when the institution was known as Columbian College, its activities were centered on College Hill, a tract of forty-six and a half acres between the present Fourteenth and Fifteenth Streets extending north from Florida Avenue somewhat beyond Columbia Road. The Medical School was located downtown. For the better part of the Columbian University period, the buildings of the University were situated along H Street between Thirteenth and Fifteenth Streets. The Medical School group still remains there.

During the last half century the University's present plant has been developed in that section of the old First Ward familiarly known as "Foggy Bottom," between Nineteenth and Twenty-fourth Streets, south of Pennsylvania Avenue. Within a few squares are the White House, the Department of the Interior, the State Department, the World Bank, and many other governmental offices and international agencies. The area is not without its reminders of historic interest to the University. President Monroe, who signed the Charter, lived at 2017 Eye Street. The first President of the Board of Trustees, the Reverend Obadiah B. Brown, was for fifty years the pastor of a church at Nineteenth and Eye Streets, and Washington selected Twenty-third and E Streets as the site of the National University he had hoped to see established.

The University as it is now organized consists of Columbian College of Arts and Sciences (undergraduate); the Graduate School of Arts and Sciences; the professional schools, which include the National Law Center and the schools of Medicine, Engineering and Applied Science, Education, Government and Business Administration, and Public and International Affairs; the College of General Studies; the Division of University Students; and the Summer Sessions.

The George Washington University is privately endowed and is governed by a self-perpetuating Board of Trustees of which the president is an ex officio member.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board. The Department of Chemistry is on the approved list of the American Chemical Society.

The School of Medicine has had continuous approval by the Council on Medical Education of the American Medical Association and the Association of American Medical Colleges. The degree of the School of Medicine is recognized by all State Examining Boards.

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*Nominated by the Alumni

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Mortimer Maxwell Caplin, B.S., LL.B., J.S.D., LL.D.

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John Bonner Duncan, B.A., LL.B., LL.D.

Lloyd Hartman Elliott, M.A., Ed.D., LL.D., *President of the University, ex officio*

Mrs. Katharine Graham, B.A.

Melville Bell Grosvenor, B.S., Sc.D., LL.D.

Brooks Hays, B.A., J.D., LL.D., L.H.D., D.C.L., D.D., HH.D.

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Joseph D. Hughes, B.S., J.D., LL.M., LL.D.

Lewellyn A. Jennings

David Matthew Kennedy, LL.B., B.A., LL.D.

*Thaddeus A. Lindner, B.A. in Govt.

Franklin Jerome Lunding, LL.B., LL.D.

Jeremiah Milbank, Jr., B.A., M.B.A.

Godfrey Leon Munter, B.A., LL.B., LL.D.

Thornton W. Owen, B.S. in C.E., B.A.

Sidney Dillon Ripley II, Ph.D., L.H.D., Sc.D.

Carleton D. Smith

Charles E. Smith

Mark Sullivan, Jr., B.A.

*William Gregg White, B.S. in C.E.

John Johnston Wilson, LL.B.

Watson W. Wise, Ph.B.

Stephen Russell Woodzell, B.S. in E.E.

James Otis Wright, B.S., J.D.

Eugene M. Zuckert, B.A., LL.B., LL.D., Sc.D.

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Alfred Henry Lawson, LL.B., LL.D.

John Keown McKee

Benjamin Mosby McKelway, Litt.D.

Walter George Ross, LL.D.

Sidney William Souers, B.A., LL.D.

Lewis L. Strauss, Sc.D., LL.D., L.H.D.

Alexander Wetmore, Ph.D., Sc.D.

Lloyd Bennett Wilson

* Nominated by the Alumni

OFFICERS OF ADMINISTRATION 1969-70

THE UNIVERSITY

Lloyd Hartman Elliott, M.A., Ed.D., LL.D., *President*
 Harold Frederick Bright, Ph.D., *Provost and Vice President for Academic Affairs*
 Henry William Herzog, B.S., *Vice President and Treasurer*
 Seymour Alpert, B.A., M.D., *Vice President for Development*
 H. John Cantini, Jr., LL.B., *Vice President for Administration*
 William David Johnson, B.S., *Director of the Budget*
 Louis Harkey Mayo, B.S., J.S.D., *Vice President for Advanced Policy Studies*
 William Parkhurst Smith, Jr., B.A., M.B.A., *Vice President for Student Affairs*
 Frederick Russell Houser, M.A., *Registrar*
 Joseph Young Ruth, B.A., *Director of Admissions*

THE SCHOOL OF MEDICINE AND THE UNIVERSITY HOSPITAL AND CLINIC

John Parks, M.S., M.D., *Dean of the Medical Center*
 James Joseph Feffer, B.A., M.D., *Associate Dean of the Medical Center, for Clinical Affairs*
 Angus MacIvor Griffin, Ph.D., *Associate Dean of the Medical Center, for Administration and Planning*
 Clarence Alfred Lowe, B.A., Ed.M., *Associate Dean of the Medical Center, for Research*
 Frank Nelson Miller, Jr., B.S., M.D., *Associate Dean of the Medical Center, for Student and Curricular Affairs*
 Calvin Trexler Klopp, B.A., M.D., *Medical Director of the University Clinic*
 Victor Frederick Ludewig, B.S., *Administrator of the University Hospital and Clinic*



THE SCHOOL OF MEDICINE

Faculty and Staff of Instruction*

EMERITI

- Errett Cyril Albritton, *Professor Emeritus of Physiology*
B.A. 1916, University of Missouri; M.D. 1921, Johns Hopkins University
- Harry Ford Anderson, *Professor Emeritus of Dermatology and Syphilology*
M.D. 1924, University of Cincinnati
- Walter Andrew Bloedorn, *Professor Emeritus of Medicine*
M.D. 1909, Creighton University; B.A. 1915, M.A. 1916, Sc.D. 1948, George Washington University
- Daniel LeRay Borden, *Professor Emeritus of Clinical Surgery*
M.D. 1912, B.S. in Med. 1916, M.A. 1917, Sc.D. 1958, George Washington University
- Dexter Means Bullard, *Professor Emeritus of Clinical Psychiatry*
Ph.B. 1920, Yale University; M.D. 1923, University of Pennsylvania
- Henry Lauran Darnier, *Professor Emeritus of Clinical Obstetrics and Gynecology*
B.A. 1916, Western Maryland College; M.D. 1920, Johns Hopkins University
- Paul Frederick Dickens, *Professor Emeritus of Clinical Medicine*
M.D. 1908, University of Nashville
- Clayton Bernard Ethridge, *Professor Emeritus of Medicine*
M.D. 1933, University of Virginia
- Chester Elwood Leese, *Professor Emeritus of Physiology*
B.A. 1922, M.A. 1925, Ph.D. 1930, University of Iowa
- Edward Lewis, *Professor Emeritus of Clinical Pediatrics*
M.D. 1918, George Washington University
- Preston Alexander McLendon, *Professor Emeritus of Pediatrics*
B.S. 1913, Wake Forest University; M.D. 1915, Columbia University
- Daniel Bruce Moffett, *Professor Emeritus of Otolaryngology*
B.A. 1910, University of Richmond; M.D. 1915, University of Maryland
- Margaret Mary Nicholson, *Professor Emeritus of Clinical Pediatrics*
B.A. 1922, M.D. 1925, George Washington University
- George Nordlinger, *Professor Emeritus of Clinical Obstetrics and Gynecology*
B.A. 1918, M.D. 1922, George Washington University
- Leland Wilbur Parr, *Professor Emeritus of Bacteriology*
B.S. 1916, Ph.D. 1923, University of Chicago
- Frederick A. Reuter, *Professor Emeritus of Urology*
M.D. 1916, George Washington University
- Ernest Alfred Watson Sheppard, *Professor Emeritus of Clinical Ophthalmology*
M.D., C.M. 1926, Queens University, Canada
- Thomas Carlton Thompson, *Professor Emeritus of Clinical Urology*
B.S. in Med., M.D. 1920, George Washington University

* The Faculty and Staff of Instruction listed here and at the head of each department is for the academic year 1969-70

ACTIVE

- Theodore Judson Abernethy, *Associate Clinical Professor of Medicine*
B.S. 1925, Denison University; M.D. 1929, Johns Hopkins University
- Kristof Abraham, *Clinical Instructor in Neurology*
M.D. 1952, Budapest University, Hungary
- Joseph Abrahams, *Associate Clinical Professor of Psychiatry*
M.D. 1939, Emory University
- Herbert Abramson, *Associate Clinical Professor of Medicine*
B.A. 1924, M.A. 1925, M.D. 1935, George Washington University
- John Pletch Adams, *Professor of Orthopaedic Surgery*
B.S. 1943, University of Missouri; M.D. 1945, Washington University
- Richard Henry Adamson, *Associate Professorial Lecturer in Physiology*
B.A. 1957, Drake University; M.S. 1959, Ph.D. 1961, University of Iowa
- Edward Adelson, *Associate Clinical Professor of Medicine*
B.S. 1941, M.D. 1947, Tufts University
- Paul Charles Adkins, *Professor of Surgery*
B.A. 1944, M.D. 1948, Johns Hopkins University
- Marvin Leon Adland, *Associate Clinical Professor of Psychiatry*
B.S. 1941, M.D. 1943, University of Chicago
- Lewis Francis Affronti, *Associate Professor of Microbiology*
B.A. 1950, M.A. 1951, State University of New York at Buffalo, Ph.D. 1958, Duke University
- Cosimo Ajmone Marsan, *Assistant Clinical Professor of Neurology*
M.D. 1942, University of Torino, Italy
- Robert Wayne Albers, *Professorial Lecturer in Biochemistry (Brain)*
B.S. 1950, University of Nebraska; Ph.D. 1954, Washington University
- Ernest Narinder Albert, *Assistant Professor of Anatomy*
B.S. 1959, High Point College; M.S. 1963, University of Pittsburgh, Ph.D. 1965, Georgetown University
- Solomon Naphtali Albert, *Assistant Clinical Professor of Anesthesiology*
B.A. 1936, M.D. 1940, American University at Beirut, Lebanon
- Theodore Crandall Alford, *Associate Professor of Surgery*
B.A. 1944, Haverford College; M.D. 1947, Johns Hopkins University
- Frank Duane Allan, *Professor of Anatomy*
B.S. 1947, M.S. 1949, University of Utah, Ph.D. 1954, Louisiana State University
- Melvin Gustavus Alper, *Clinical Professor of Ophthalmology*
B.A. 1943, M.D. 1945, University of Virginia
- Hubert Joseph Alpert, *Clinical Instructor in Medicine*
M.D. 1962, University of Illinois
- Louis Katz Alpert, *Professor of Medicine*
B.S. 1928, M.D. 1932, Yale University
- Seymour Alpert, *Professor of Anesthesiology, Vice President of the University, for Development*
B.A. 1939, Columbia University; M.D. 1943, State University of New York, Downstate Medical Center
- James Francis Ambury, *Assistant Clinical Professor of Medicine*
B.S. 1937, Fordham University; M.D. 1941, Georgetown University
- Harvey Hirsch Ammerman, *Clinical Professor of Neurological Surgery*
B.S. 1939, M.D. 1941, George Washington University
- Arthur James Anderson, *Clinical Instructor in Medicine*
M.D. 1961, George Washington University
- James Edward Anderson, *Clinical Instructor in Obstetrics and Gynecology*
B.A. 1955, Union College, Nebraska; M.D. 1965, Loma Linda University

* On sabbatical leave fall semester 1969-70

Robert Harper Anderson, *Clinical Instructor in Pediatrics*
M.D. 1946, Duke University

W. French Anderson, *Professorial Lecturer in Biochemistry (Genetics)*
B.A. 1958, M.D. 1963, Harvard University; M.A. 1960, Cambridge University, England

Willis Edward Anderson, *Associate Professor of Clinical Engineering*
B.S. 1947, U.S. Merchant Marine Academy; B.S. 1950, Roanoke College; M.D. 1955, Virginia Commonwealth University Medical College of Virginia; M.P.H. 1966, Tulane University of Louisiana

William Staton Anderson, *Clinical Professor of Pediatrics*
B.A. 1927, Duke University; M.D. 1931, Johns Hopkins University

John Lawrence Angel, *Professorial Lecturer in Anatomy and Anthropology*
B.A. 1936, Ph.D. 1942, Harvard University

Leonard Philip Appel, *Clinical Instructor in Medicine*
B.A. 1953, M.D. 1957, New York University

Ronald Alan Apter, *Assistant Clinical Professor of Medicine*
M.D. 1958, George Washington University

Reza Arasteh, *Special Lecturer in Psychiatry*
B.A. 1948, M.A. 1950, University of Tehran, Iran; Ph.D. 1953, Louisiana State University

Irwin Ardam, *Assistant Clinical Professor of Medicine*
B.A. 1948, New York University; M.D. 1954, New York Medical College

Luis Felipe Arias-Bernal, *Instructor in Obstetrics and Gynecology*
B.A. 1950, National College of Saint Bartholomew, Colombia; M.D. 1957, National University, Colombia

Malcolm Stewart Arntstein, *Assistant Clinical Professor of Medicine*
B.A. 1951, Brown University; M.D. 1955, Tufts University

Tryggvi Asmundsson, *Instructor in Medicine*
M.D. 1964, University of Iceland

Gilbert Paul August, *Assistant Professor of Pediatrics*
B.S. 1958, City College, New York; M.D. 1962, New York University

Jorge Ignacio Auñón, *Instructor in Clinical Engineering*
B.S. in Engr. 1967, M.S. 1969, George Washington University

Simon Leo Auster, *Assistant Clinical Professor of Psychiatry*
B.A. 1952, Yeshiva University; M.D. 1956, New York University

Gordon Avery, *Associate Professor of Pediatrics*
B.A. 1953, Harvard University; M.D. 1958, Ph.D. 1959, University of Pennsylvania

William Ross Ayers, *Research Instructor in Medicine*
B.S. 1957, M.D. 1961, Georgetown University

Silas Babin, Jr., *Assistant Clinical Professor of Medicine*
M.D. 1951, Louisiana State University

Frank Solomon Bacon, *Associate Clinical Professor of Medicine*
B.S. 1928, M.B. 1930, M.D. 1931, University of Minnesota

James Michael Bacos, *Associate Professor of Medicine*
B.S. 1948, Virginia Polytechnic Institute; M.D. 1953, Duke University

Robert Emil Badwey, *Clinical Instructor in Obstetrics and Gynecology*
B.S. 1955, Franklin and Marshall College; M.D. 1959, University of Pittsburgh

Alfred Baer, *Associate Clinical Professor of Medicine*
B.A. 1942, Ohio State University; M.D. 1945, Johns Hopkins University

William Eldridge Bageant, *Assistant Clinical Professor of Anesthesiology*
M.D. 1959, George Washington University

Jack Sidney Bailey, *Assistant Research Professor of Medicine (Microbiology)*
B.S. 1952, Hampton Institute; M.S. 1960, Howard University

John Martyn Bailey, *Associate Professor of Biochemistry*
B.S. 1949, Ph.D. 1952, University of Wales

- William Otis Bailey, Jr., *Associate Clinical Professor of Medicine*
M.D. 1940, George Washington University
- George Ivan Baker, *Assistant Clinical Professor of Orthopaedic Surgery*
B.A. 1950, Syracuse University; M.D. 1954, State University of New York, Upstate Medical Center
- Guillermo Alfredo Balfour, *Special Lecturer in Pediatrics*
M.D. 1959, University of Buenos Aires, Argentina
- Roberta Anderson Ballard, *Instructor in Pediatrics*
B.A. 1961, Earlham College; M.D. 1965, University of Chicago
- Giuseppe Balsamo, *Assistant Clinical Professor of Physical Medicine and Rehabilitation*
Laurea in Medicinae Chirurgia 1952, University of Rome, Italy
- Bernard Alvin Band, *Clinical Instructor in Obstetrics and Gynecology*
B.A. 1952, B.S. 1954, George Washington University; M.D. 1959, Howard University
- William Landon Banfield, *Clinical Instructor in Urology*
B.A. 1954, Princeton University; M.D. 1958, George Washington University
- Samuel Harvard Barboe, Jr., *Assistant Professorial Lecturer in Epidemiology and Environmental Health*
B.S. 1955, M.P.H. 1957, University of California, Berkeley; Dr.P.H. 1966, University of California, Los Angeles
- Lewellys Franklin Barker, *Clinical Instructor in Medicine*
B.A. 1955, Princeton University; M.D. 1959, Johns Hopkins University
- Ann Birnbaum Barnett, *Assistant Professor of Neurology*
B.A. 1951, Sarah Lawrence College; M.D. 1956, Harvard University
- Solomon Efrem Barr, *Assistant Clinical Professor of Medicine*
B.A. 1951, M.D. 1954, George Washington University
- Andre Barrabini, *Clinical Instructor in Medicine*
M.D. 1953, University of Paris, France
- John William Barrett, *Clinical Instructor in Neurological Surgery*
M.D. 1958, George Washington University
- Robert Henry Barter, *Professor of Obstetrics and Gynecology*
B.S. 1937, M.D. 1940, University of Wisconsin
- Walter Earl Barton, *Special Lecturer in Psychiatry*
B.S. 1928, M.D. 1931, University of Illinois
- William Howard Barton, *Assistant Professor of Pediatrics (Psychiatry)*
B.A. 1955, Yale University; M.D. 1960, University of Tennessee
- Emil Herbert Bauersfeld, *Assistant Clinical Professor of Medicine*
B.A. 1932, M.D. 1935, George Washington University
- Joseph Harold Baugh, *Associate Clinical Professor of Surgery*
B.S. 1949, Wilmington College, Ohio; M.D. 1953, St. Louis University
- David Lionel Bazelon, *Clinical Professor of Psychiatry (Socio-legal Aspects)*
B.S. in Law 1931, Northwestern University; LL.D. 1966, Colby College
- Kenneth Louis Becker, *Associate Professor of Medicine*
B.A. 1952, University of Michigan; M.D. 1956, New York Medical College; Ph.D. 1963, University of Minnesota
- Virginia Patterson Beelar, *Assistant Clinical Professor of Medicine*
B.A. 1933, M.D. 1936, University of Oregon
- Samuel Michael Belinsky, *Clinical Instructor in Obstetrics and Gynecology*
B.A. 1955, University of Bridgeport; M.D. 1959, George Washington University
- Robert Reid Belton, *Associate Clinical Professor of Medicine*
B.A. 1944, Willamette University; M.D. 1948, George Washington University; M.D. 1952, University of Zurich, Switzerland

- Ruth Boschwitz Benedict, *Associate Clinical Professor of Medicine*
B.A. 1935, Wellesley College; M.D. 1939, New York University
- Roger Bergstrom, *Clinical Instructor in Pediatrics*
M.D. 1952, George Washington University
- David Kip Berler, *Clinical Instructor in Ophthalmology*
B.A. 1955, M.D. 1958, Cornell University
- Cheston Milton Berlin, Jr., *Assistant Professor of Pediatrics*
B.A. 1958, Haverford College; M.D. 1962, Harvard University
- Robert William Berliner, *Special Lecturer in Medicine (Renal Disease)*
B.S. 1936, Yale University; M.D. 1939, Columbia University
- Harry Louis Berman, *Assistant Clinical Professor of Radiology*
B.S. 1937, Bradley University; M.B. 1932, M.D. 1933, Northwestern University
- Sidney Berman, *Clinical Professor of Psychiatry*
B.S. 1928, M.D. 1932, Georgetown University
- Solomon Rodney Bersack, *Assistant Clinical Professor of Radiology*
B.S. 1931, City College, New York; M.D. 1935, New York University
- Gerrit Besselaar, *Assistant Professor of Medicine*
M.D. 1959, University of Leiden, Netherlands
- Christopher Theodore Bever, *Associate Clinical Professor of Psychiatry*
B.A. 1940, M.D. 1943, Harvard University
- Lewis Henry Biben, *Assistant Clinical Professor of Medicine*
M.D. 1949, Hahnemann Medical College
- Emilie Annabelle Black, *Clinical Instructor in Pediatrics*
B.S. 1942, M.D. 1945, George Washington University
- Brian Blades, *Lewis Saltz Professor of Surgery*
B.A. 1928, University of Kansas; M.D. 1932, Washington University
- Ethel Joan Blanchette, *Assistant Professorial Lecturer in Anatomy*
B.S. 1956, Queens College, New York; M.S. 1959, New York University; Ph.D. 1965, Columbia University
- Robert Allan Blum, *Instructor in Psychiatry*
B.S. 1959, M.S. 1960, Massachusetts Institute of Technology; M.D. 1964, University of Pennsylvania
- Joe Morris Blumberg, *Clinical Professor of Pathology*
B.S. 1930, M.D. 1933, Emory University
- Lester Sylvan Blumenthal, *Associate Clinical Professor of Medicine*
B.A. 1938, M.D. 1941, George Washington University; M.S. in Med. 1945, University of Minnesota
- Norman Kay Bohrer, *Clinical Instructor in Medicine*
M.D. 1957, George Washington University
- Frank Joseph Borsody, *Clinical Instructor in Medicine*
B.A. 1955, George Washington University; M.D. 1960, University of Virginia
- John Andrew Bottiglione, *Special Lecturer in Pediatrics*
B.S. 1958, University of Notre Dame; M.D. 1962, Seton Hall University
- John Henry Bouma, *Assistant Clinical Professor of Psychiatry*
B.A. 1948, B.S. 1949, M.B. 1952, M.D. 1953, University of Minnesota
- Carl Wright Boyer, Jr., *Associate Clinical Professor of Radiology*
B.S. 1951, Muhlenberg College; M.D. 1955, Jefferson Medical College of Philadelphia
- Henry Alexander Bradford, *Assistant Professor of Epidemiology and Environmental Health*
B.A. 1961, University of Colorado; M.S. 1967, University of California, Los Angeles
- Roscoe Brady, Jr., *Professorial Lecturer in Biochemistry (Brain)*
M.D. 1947, Harvard University
- Frederick Bertram Brandt, *Assistant Clinical Professor of Surgery*
B.S. 1942, M.D. 1943, University of Maryland

- Ernst Bremer, Assistant Clinical Professor of Surgery**
M.D. 1949, University of Marburg, Germany
- Gloria Godbey Brennan, Assistant Clinical Professor of Pathology**
B.A. 1949, M.D. 1952, George Washington University
- Frances Elizabeth Brennecke, Clinical Instructor in Orthopaedic Surgery**
B.A. 1927, University of Pennsylvania; M.D. 1936, University of Chicago
- Alexander Breslow, Associate Professor of Pathology**
B.S. 1948, M.S., M.D. 1953, University of Chicago
- Alice Brigham, Assistant Clinical Professor of Medicine**
B.A. 1936, M.D. 1941, University of Michigan
- Albert Seymour Bright, Clinical Instructor in Obstetrics and Gynecology**
B.A. 1935, M.D. 1938, George Washington University
- Alfred Brigulio, Associate Clinical Professor of Medicine**
M.D. 1936, George Washington University
- Warren Daniel Brill, Associate Clinical Professor of Medicine**
B.S., M.D. 1944, University of Maryland
- Bernard Beryl Brodie, Professorial Lecturer in Pharmacology**
B.S. 1931, McGill University, Canada; Ph.D. 1935, New York University
- Arnold Gene Brody, Clinical Instructor in Medicine**
M.D. 1960, University of Illinois
- Bertram Brown, Associate Clinical Professor of Psychiatry**
B.A. 1952, Brooklyn College; M.D. 1956, Cornell University; M.P.H. 1960, Harvard University
- Brooks Gideon Brown, Clinical Instructor in Surgery**
M.D. 1939, George Washington University
- Crawford Southwell Brown, Assistant Clinical Professor of Dermatology**
B.A. 1946, Kenyon College; M.D. 1948, University of Michigan
- Halla Brown, Professor of Medicine**
M.D. 1939, Johns Hopkins University
- Raymond Nathan Brown, Assistant Clinical Professor of Anatomy**
M.D. 1943, George Washington University
- Robert Horatio Brown, Assistant Clinical Professor of Orthopaedic Surgery**
B.A. 1940, Tufts University; M.D. 1943, Harvard University
- Thomas McPherson Brown, Eugene Meyer Professor of Medicine**
B.A. 1929, Swarthmore College; M.D. 1933, Johns Hopkins University
- Philip Craig Brunschwyler, Assistant Clinical Professor of Pediatrics**
B.A. 1951, West Virginia University; M.D. 1955, University of Maryland
- George Cumming Buchanan, Assistant Clinical Professor of Medicine**
B.A. 1943, Duke University; M.D. 1948, Johns Hopkins University
- Lloyd Byron Burk, Jr., Assistant Clinical Professor of Surgery**
B.A. 1938, M.D. 1942, University of Virginia
- William Wesley Burr, Jr., Professorial Lecturer in Biochemistry (Isotopes)**
B.A. 1947, University of Nebraska; M.S. 1948, Ph.D. 1951, University of Illinois; M.D. 1960, University of Texas at Austin
- Boyd Lee Burris, Assistant Clinical Professor of Psychiatry**
B.S. 1951, M.D. 1952, University of Tennessee
- James Burwell, Clinical Instructor in Radiology**
B.A. 1952, University of Pittsburgh; M.D. 1956, University of Maryland
- Stewart William Bush, Associate Professor of Medicine**
B.S. 1943, University of Massachusetts; M.D. 1946, Johns Hopkins University
- Robert Neil Butler, Assistant Clinical Professor of Psychiatry**
B.A. 1949, M.D. 1953, Columbia University
- Cesar Augusto Caceres, Professor of Clinical Engineering**
B.S. 1949, M.D. 1953, Georgetown University

- Paul Calabrisi, *Alumni Professor of Anatomy*
B.A. 1931, Catholic University of America; M.A. 1940, George Washington University;
Ph.D. (Cantab.) 1955, Cambridge University, England
- Juan Calatayud, *Associate Professor of Medicine*
M.D. 1952, University of Valencia, Spain
- Dale Corbin Cameron, *Clinical Professor of Psychiatry*
B.A. 1933, M.D. 1936, University of Nebraska, M.P.H. 1951, Johns Hopkins University
- Jerome Wolf Canter, *Assistant Clinical Professor of Surgery*
M.D. 1955, George Washington University
- David Roland Carlson, *Clinical Instructor in Obstetrics and Gynecology*
B.S. 1953, Drake University; M.D. 1960, George Washington University
- Charles Patrick Henry Carroll, *Clinical Instructor in Neurological Surgery*
B.A. 1952, Boston College; M.D. 1961, Georgetown University
- Marie Mullaney Cassidy, *Associate Professor of Physiology*
B.S. (General) 1957, B.S. (Special) 1958, M.S. 1959, Ph.D. 1962, National University of Ireland
- Richard Bernard Castell, *Assistant Clinical Professor of Medicine; University Physician; Director, Health Services*
B.A. 1932, M.D. 1935, George Washington University
- Hereward Seagrieve Cattell, *Clinical Instructor in Orthopaedic Surgery*
B.A. 1954, Amherst College; M.D. 1958, University of Rochester
- Ralph Mearle Caulk, *Associate Clinical Professor of Radiology*
M.D. 1934, University of Kansas
- William Paxson Chalfant, Jr., *Assistant Clinical Professor of Ophthalmology*
M.D. 1934, Hahnemann Medical College
- Morris Jay Chalick, *Assistant Clinical Professor of Psychiatry*
B.A. 1958, University of Pennsylvania; M.D. 1962, Jefferson Medical College of Philadelphia
- John Loomis Chamberlain III, *Clinical Instructor in Pediatrics*
B.S. 1953, Amherst College; M.D. 1957, University of Virginia
- Chao Hung Chan, *Instructor in Medicine (Metabolic Research)*
B.B.A. 1955, M.D. 1962, University of the East, Philippines
- *PooLiang Chang, *Clinical Instructor in Medicine*
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B.A. 1953, Kenyon College; M.D. 1962, George Washington University
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- Milton Gusack, *Associate Clinical Professor of Medicine*
B.A. 1937, M.D. 1941, Johns Hopkins University
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B.A. 1929, College of Wooster; M.D. 1938, Columbia University
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B.A. 1941, M.D. 1949, University of Texas at Austin; M.A. 1942, Columbia University; M.S. in P.A. 1968, George Washington University
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B.A. 1961, Bellarmine-Ursuline College; Ph.D. 1966, University of Louisville
- Michael Joseph Halberstam, *Clinical Instructor in Medicine*
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- Wilbur Albert Hamman, *Clinical Instructor in Psychiatry*
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- Forest Klair Harris II, *Assistant Clinical Professor of Medicine*
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B.A. 1934, Vassar College; M.D. 1938, Johns Hopkins University
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B.A. 1933, M.D. 1936, George Washington University
- Thomas Lees Hartman, *Assistant Clinical Professor of Medicine*
B.A. 1936, Muhlenberg College; M.A. 1938, University of Texas at Austin; M.D. 1943, Johns Hopkins University
- William Herbert Harvey, *Assistant Clinical Professor of Medicine*
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D.D.S. 1947, University of Louisville; M.D. 1951, University of Vermont; J.D. 1958, George Washington University
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- Elson Bowman Helwig, *Clinical Professor of Pathology (Dermatologic)*
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- John David Herman, *Clinical Instructor in Medicine*
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B.A. 1956, M.D. 1960, Case Western Reserve University
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Ph.D. 1956, D.Sc. 1964, National University of Ireland
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M.D. 1952, St. Louis University; M.S. 1959, University of Colorado; Ph.D. 1963, University of
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B.S. 1938, Howard University; M.D. 1943, Meharry Medical College

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B.S. 1931, Manhattan College; M.D. 1935, George Washington University
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B.A. 1946, M.D. 1949, George Washington University
- Thomas William Mattingly, *Special Lecturer in Medicine (Cardiology)*
B.S. 1920, M.D. 1930, Georgetown University
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B.S. 1946, Virginia Commonwealth University Medical College of Virginia, M.S. 1955, Trinity University; Ph.D. 1960, Vanderbilt University
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- William Bernard McAvoy, *Assistant Professor of Radiology*
B.A. 1944, M.D. 1947, George Washington University
- James Robert McClelland, *Clinical Instructor in Surgery*
M.D. 1951, George Washington University
- James Edward McClenathan, *Associate Professor of Surgery*
B.A. 1943, Washington and Jefferson College; M.D. 1947, University of Pittsburgh
- Richard Allen McConaughy, *Clinical Instructor in Medicine*
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- William Stanley McCune, *Clinical Professor of Surgery*
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B.S. 1945, Cumberland College of Tennessee; M.D. 1948, University of Tennessee
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B.A. 1955, M.D. 1959, George Washington University
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M.B. 1949, M.D. 1952, National University of Ireland
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B.A. 1944, Miami University; M.D. 1948, George Washington University
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B.A. 1922, M.A. 1924, M.D. 1928, George Washington University
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B.S. 1957, Loyola College; M.D. 1961, University of Maryland
- Harvey Leon Ozer, *Professorial Lecturer in Biochemistry*
B.A. 1960, Harvard University; M.D. 1965, Stanford University
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B.A., M.D. 1944, George Washington University
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M.D. 1954, University of the Philippines
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B.S. 1952, M.D. 1956, George Washington University
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M.D. 1943, George Washington University
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B.A. 1930, M.S. 1932, M.D. 1934, University of Wisconsin
- Marshall Miller Parks, *Clinical Professor of Ophthalmology*
B.A. 1939, Illinois College; M.D. 1943, St. Louis University
- Robert Carleton Parlett, *Professor of Microbiology*
B.A. 1948, M.S. 1951, University of Arizona; Ph.D. 1956, M.D. 1958, Northwestern University
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M.D. 1945, George Washington University
- Robert Harold Parrott, *Professor of Pediatrics*
M.D. 1949, Georgetown University
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M.B., B.Surg. 1949, University of London, England
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B.A. 1951, University of Richmond, M.D. 1960, Virginia Commonwealth University Medical College of Virginia
- Beneta Jane Peacock, *Instructor in Pediatrics*
B.A. 1946, Mary Baldwin College; M.D. 1965, New York University

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B.S. 1930, M.D. 1934, Emory University
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B.A. 1934, DePauw University; M.D. 1938, Indiana University
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B.S. 1931, M.D. 1935, Howard University
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B.A. 1955, University of North Carolina at Chapel Hill, M.D. 1960, University of Tennessee
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B.A. 1928, D.M.S. 1966, Newberry College; M.D. 1932, Medical College of South Carolina
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M.D. 1942, University of Buenos Aires, Argentina
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B.A. 1945, University of Kentucky; M.D. 1946, University of Louisville
- Lowell Wesley Perry, *Assistant Professor of Pediatrics*
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- Arthur Peschin, *Associate Professor of Anesthesiology*
B.S. 1954, University of Alabama; M.D. 1959, Chicago Medical School
- John Emerick Peterson, *Clinical Instructor in Surgery*
B.A. 1950, M.D. 1954, Cornell University
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B.A. 1956, M.D. 1959, George Washington University
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B.A., B.S. 1928, M.D. 1931, University of Minnesota
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M.D. 1944, University of Havana, Cuba
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B.S. 1923, Purdue University; M.S. 1940, University of Minnesota
- Lawrence Pierce, *Associate Professor of Medicine*
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B.A. 1939, Marietta College; M.D., C.M. 1943, McGill University, Canada
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B.A. 1938, Fordham University; M.D. 1942, New York University
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B.A. 1931, Goucher College; M.D. 1946, University of Maryland
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Ph.D. 1945, B.S. 1947, M.D. 1949, University of Chicago
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B.S. 1946, Ph.D. 1952, University of Chicago

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B.S. 1951, Georgetown University; M.D. 1955, University of Maryland
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B.A. 1958, M.D. 1962, University of Pennsylvania
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B.A. 1925, Washington and Lee University; M.D. 1929, Cornell University; Ph.D. 1933, University of Minnesota
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B.A. 1950, M.D. 1953, George Washington University
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B.A. 1956, M.D. 1960, Yale University
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M.D. 1949, Royal University of Malta; D.O.M.S. 1959, University of Vienna, Austria
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B.A. 1939, B.S. 1940, M.D. 1942, University of Oklahoma
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B.A. 1954, Hamilton College; M.D. 1958, Cornell University
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M.D. 1950, Santo Domingo University, Dominican Republic
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B.S. 1955, Denison University; M.D. 1959, Ohio State University
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B.A. 1930, M.D. 1934, Harvard University
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M.D. 1939, Duke University
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B.S. 1955, University of South Carolina; M.D. 1956, Medical College of South Carolina; M.A. 1961, Columbia University
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- Jorge Carlos Rios, *Assistant Clinical Professor of Medicine*
M.D. 1959, University of Buenos Aires, Argentina
- Hugo Victor Rizzoli, *Clinical Professor of Neurological Surgery*
M.D. 1940, Johns Hopkins University
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- Robert Hood Robertson, *Clinical Instructor in Neurology*
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- Harry Alwine, *Fellow in Microbiology*
B.S. 1963, Ursinus College
- Richard Ammerman, *Assistant in Psychiatry*
B.A. 1964, Yale University; M.D. 1969, Tufts University
- Benjamin Avrunin, *Assistant in Medicine*
B.S. 1963, Georgetown University, M.D. 1968, Tulane University of Louisiana
- Tali Bashour, *Assistant in Medicine (Cardiology)*
M.D. 1966, Damascus University, Syrian Arab Republic

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B.S. 1959, West Liberty State College; M.D. 1963, Temple University

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B.S. 1960, St. Mary's College of California; M.S. 1965, George Washington University

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M.D. 1959, University of Leiden, Netherlands

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B.A. 1956, Sadiki, Tunisia; M.D. 1963, University of Paris, France

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B.S. 1957, Trinity College, Connecticut; M.D. 1964, University of North Carolina at Chapel Hill

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B.S. 1961, University of Maryland; M.D. 1965, George Washington University

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B.E. 1962, M.D. 1966, Vanderbilt University

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B.A., M.D. 1968, Boston University

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B.S. 1963, M.D. 1965, George Washington University

Carey Walton Campbell, Assistant in Neurological Surgery

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B.S. 1962, Mount St. Mary's College, Maryland; M.D. 1966, George Washington University

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B.A. 1960, Columbia University; M.D. 1965, New York University

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B.S. 1960, University of Pittsburgh; M.D. 1964, Hahnemann Medical College

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M.D. 1960, Kaohsiung Medical College, Taiwan

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B.S. 1960, Central State College, Oklahoma; M.D. 1964, University of Oklahoma

William James Cochrane, Assistant in Obstetrics and Gynecology

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B.A. 1959, Western Maryland College; M.D. 1963, University of Maryland

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M.D. 1968, George Washington University

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M.D. 1965, George Washington University

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B.A. 1947, Indiana University; M.A. 1957, Columbia University

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B.S. 1960, California State College, Pennsylvania; M.S. 1965, George Washington University

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B.A. 1963, Western Maryland College; M.D. 1967, University of Maryland

- Samuel Fenichel, *Assistant in Radiology*
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B.S. 1961, University of Bombay, India; M.S. 1965, University of Minnesota
- Alfred Fevrier, *Assistant in Medicine*
B.S. 1963, Massachusetts Institute of Technology; M.D. 1968, University of Florida
- Charles Joseph Filipi, *Assistant in Surgery*
B.S. 1963, M.D. 1967, University of Iowa
- Robert George Filpi, *Assistant in Radiology*
B.S. 1961, University of the Pacific; M.D. 1965, George Washington University
- Harry Stephen Fletcher, *Assistant in Surgery*
B.S. 1963, Mount St. Mary's College, Maryland; M.D. 1967, George Washington University
- Eleanor Flores, *Assistant in Medicine*
M.D. 1961, University of Santo Tomas, Philippines
- Ulla M-Sor Fortune, *Assistant in Orthopaedic Surgery*
M.D. 1965, George Washington University
- William Patrick Fortune, *Assistant in Orthopaedic Surgery*
B.S. 1958, Springfield College, M.D. 1965, George Washington University
- Stanley Friedler, *Assistant in Orthopaedic Surgery*
M.D. 1965, University of Maryland
- Raymond Gambrell, *Assistant in Obstetrics and Gynecology*
B.S. 1964, M.D. 1968, University of Maryland
- Judith Gardner, *Assistant in Psychiatry*
B.A. 1961, Vassar College, M.D. 1966, University of Michigan
- Phillip George, *Assistant in Surgery*
B.S. 1961, Pennsylvania State University; M.D. 1965, University of Miami
- Brian Gibbons, *Assistant in Orthopaedic Surgery*
B.A. 1962, Fordham University; M.D. 1966, Georgetown University
- Joseph Martin Giordano, *Assistant in Surgery*
B.A. 1963, Georgetown University; M.D. 1967, Jefferson Medical College of Philadelphia
- Lila Giron-Banzon, *Assistant in Anesthesiology*
M.D. 1959, University of Santo Tomas, Philippines
- Marvin Gold, *Assistant in Orthopaedic Surgery*
M.D. 1953, University of Illinois
- Steven Goldberger, *Assistant in Medicine*
B.S. 1964, University of Florida; M.D. 1968, University of Mississippi
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B.A. 1960, Bryn Mawr College; M.D. 1967, George Washington University
- Lawrence Green, *Assistant in Ophthalmology*
B.A. 1964, Brown University; M.D. 1968, University of Pittsburgh
- Joseph Grosso, *Assistant in Pathology*
M.D. 1966, New Jersey College of Medicine and Dentistry
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M.D. 1962, Calcutta National Medical Institute, India
- Jose Cruz Guinto, *Assistant in Radiology*
M.D. 1966, University of the Philippines
- Howard David Gunlock, *Assistant in Orthopaedic Surgery*
M.D. 1963, Duke University
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B.S. 1961, University of Michigan; M.D. 1965, University of Oklahoma
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B.A. 1964, Rutgers, the State University; M.D. 1968, Duke University
- Mary Kathryn Hammock, *Assistant in Neurological Surgery*
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B.Ch.E. 1957, Cooper Union; M.D. 1964, New York University
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B.A. 1959, West Virginia University; M.D. 1963, Virginia Commonwealth University Medical College of Virginia
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B.S. 1960, University of Pittsburgh; M.D. 1965, George Washington University
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B.A. 1965, University of Virginia; M.D. 1968, Jefferson Medical College of Philadelphia
- David Paul Houchens, *Fellow in Microbiology*
B.S. 1959, Stetson University; M.S. 1964, George Washington University
- Chen Hsing Hsu, *Assistant in Medicine*
M.D. 1965, National Taiwan University
- Mary Dulaney Hyde, *Assistant in Pathology*
B.S. 1950, M.D. 1954, University of Arkansas
- Manuel Insignares, *Assistant in Anesthesiology*
M.D. 1958, Xavier Pontifical University, Colombia
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B.S. 1963, Fordham University; M.D. 1968, State University of New York, Downstate Medical Center
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- Thomas Llewellyn Jones, Jr., *Assistant in Obstetrics and Gynecology*
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- Manohar Kapur, *Fellow in Medicine*
M.B., B.S. 1962, All-India Institute of Medical Sciences
- Charles Norman Kendall, *Assistant in Radiology*
B.S. 1958, George Peabody College for Teachers; M.D. 1963, Loma Linda University
- Arastoo Khanizadeh, *Research Fellow in Obstetrics and Gynecology*
M.D. 1958, Tehran School of Medicine, Iran
- Jong Kim, *Assistant in Anesthesiology*
M.D. 1966, Soons Medical College, Korea
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M.D. 1963, M.S. 1965, Yonsei University, Korea
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M.D. 1955, University of Medical Sciences, Thailand
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- Barbara Meyer Meyers, *Fellow in Medicine*
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- Andrew Molchon, *Assistant in Psychiatry*
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- Sung Moon, *Assistant in Anesthesiology*
M.D. 1960, Yonsei University, Korea
- Edwin Curran Murphy, Jr., *Fellow in Microbiology*
B.A. 1965, Catholic University of America
- Peter Naumoff, *Assistant in Radiology*
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- Parvaneh Navace, *Assistant in Obstetrics and Gynecology*
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- Parviz Navidi, *Assistant in Anesthesiology*
M.D. 1964, Pahlevi University, Iran
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B.S. 1956, Forman Christian College, Pakistan; M.B., B.S. 1961, King Edward Medical College, Pakistan
- Donald Lee Neugebauer, *Fellow in Microbiology*
B.A. 1953, M.A. 1955, University of South Dakota
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M.D. 1966, Institute of Medicine, Rangoon, Burma
- Thien Yew Ng, *Assistant in Anesthesiology*
M.D. 1967, Institute of Medicine, Rangoon, Burma
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B.S. 1962, Iowa Wesleyan College; M.D. 1966, University of Missouri
- Peter Nolan, *Assistant in Surgery*
M.D. 1966, Temple University
- Hoen-Hoang Oen, *Fellow in Medicine (Hematology)*
M.D. 1960, University of Indonesia
- Carl Oettinger, *Assistant in Medicine*
B.S. 1964, University of Pittsburgh, M.D. 1968, Hahnemann Medical College
- Edwin Olsen, *Assistant in Medicine*
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M.D. 1963, University of the East, Philippines
- Michael Passaretti, *Assistant in Surgery*
B.A. 1964, University of Massachusetts; M.D. 1968, Tufts University
- Susan Marie Pember, *Fellow in Microbiology*
B.A. 1966, State University of New York, College at New Paltz
- Virginia Randall Phelps, *Fellow in Physiology*
B.A. 1969, Wheaton College, Massachusetts
- Jadwige Piasecka, *Assistant in Psychiatry*
C.B.M. 1957, M.D. 1960, Birmingham University, England
- Roger Pierce, *Assistant in Obstetrics and Gynecology*
B.S. 1964, George Washington University, M.D. 1968, Georgetown University
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- Lawrence Theodore Purcell, *Assistant in Surgery (Urology)*
B.A. 1959, Dartmouth College, M.D. 1963, George Washington University
- Jose Antonio Ramon-Lamus, *Assistant in Anesthesiology*
M.D. 1962, National University of Colombia
- Norman Rapp, *Assistant in Medicine*
B.S. 1963, M.D., C.M. 1967, McGill University, Canada
- Joel Reiskin, *Assistant in Medicine*
M.D. 1963, Wake Forest University
- Rita Rigor, *Assistant in Obstetrics and Gynecology*
M.D. 1965, University of Santo Tomas, Philippines
- Morton Jay Roberts, *Assistant in Obstetrics and Gynecology*
B.A. 1964, Franklin and Marshall College, M.D. 1968, George Washington University
- Noel Rogers, *Assistant in Orthopaedic Surgery*
M.D. 1967, Georgetown University
- Myron Rose, *Assistant in Obstetrics and Gynecology*
B.A. 1958, Brooklyn College; M.D. 1967, University of Missouri
- Francisco Rovira, *Assistant in Psychiatry*
Licenciado 1965, University of Barcelona, Spain

- Jo-Anne Ruby, *Fellow in Anatomy*
B.S. 1967, George Washington University
- Gil Ruiz, *Fellow in Medicine (Allergy)*
M.D. 1963, University of Santo Tomas, Philippines
- Luanne Ruona, *Assistant in Psychiatry*
B.A. 1963, Northern Michigan University; M.D. 1967, University of Michigan
- Gary Edward Russolillo, *Assistant in Surgery*
B.A. 1964, University of Pennsylvania; M.D. 1968, George Washington University
- Nakamichi Saito, *Assistant in Obstetrics and Gynecology*
M.D. 1965, Kyushu University, Japan
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M.D. 1962, Xavier Pontifical University, Colombia
- Francisco Sanchez, *Assistant in Surgery*
M.D. 1966, University of Oklahoma
- Judy Sandique, *Assistant in Anesthesiology*
M.D. 1966, University of Santo Tomas, Philippines
- Steven Matthew Sandor, *Assistant in Obstetrics and Gynecology*
M.B., Ch.B. 1964, University of Edinburgh, Scotland
- Rolando Santos, *Assistant in Medicine (Infectious Diseases)*
M.D. 1963, University of the East, Philippines
- Mohammed Ali Sartawi, *Assistant in Neurological Surgery*
M.D. 1963, University of Baghdad, Iraq
- Charles Isaac Schneiderman, *Assistant in Obstetrics and Gynecology*
B.A. 1964, University of Michigan; M.D. 1968, George Washington University
- Frances Pierce Schuler, *Fellow in Anatomy*
B.S. 1952, Birmingham-Southern College, M.S. 1954, Emory University
- Yih-Fu Shiau, *Fellow in Physiology*
Med.B. 1966, Taipei Medical College, Taiwan
- William Charles Silberman, *Assistant in Pathology*
B.A. 1958, M.D. 1961, George Washington University
- Kumar Baikunth Singh, *Assistant in Medicine*
M.B. B.S. 1960, Medical College of Nagpur, India
- Mridula Singh, *Assistant in Pathology*
B.S. 1961, Ewing Christian College, India; M.B., B.S. 1966, Lady Hardinge Medical College, India
- Thomas Sloan, *Assistant in Medicine*
B.A. 1964, Wabash College; M.D. 1968, University of Illinois
- Mandel Don Stearman, *Assistant in Radiology*
B.A. 1961, M.D. 1964, George Washington University
- James Strite, *Assistant in Surgery*
B.S. 1962, Dickinson College; M.D. 1966, University of Pennsylvania
- George Weldon Strother, *Assistant in Medicine*
B.S. 1960, University of Pittsburgh; M.D. 1963, George Washington University
- Ubol Sukprasith, *Assistant in Anesthesiology*
M.D. 1956, University of Medical Science, Siriraj Hospital, Thailand
- Reina Sumner, *Assistant in Anesthesiology*
M.D. 1966, University of the East, Philippines
- Anne Marie Thompson, *Fellow in Medicine (Renal Diseases)*
B.A. 1963, Immaculate College, Pennsylvania; M.D. 1967, Jefferson Medical College of Philadelphia
- William Frederic Thompson, *Assistant in Psychiatry*
B.S. 1963, City College, New York; M.D. 1967, George Washington University
- Nadim Timani, *Fellow in Medicine (Cardiology)*
M.D. 1966, French School of Medicine, Beirut, Lebanon

Alfonso Vergara, Assistant in Medicine
M.D. 1968, Valladolid University, Spain

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B.A. 1961, M.D. 1965, University of Pennsylvania

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B.S. 1959, Bennett College; M.A. 1960, Howard University; M.D. 1967, Woman's Medical College of Pennsylvania

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B.A. 1964, Columbia University; M.D. 1968 Tufts University

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B.S. 1963, M.D. 1967, University of Maryland

Rhoda Binley Yarkin, Fellow in Physiology
B.S. 1967, George Washington University

Sharukin Yelda, Assistant in Orthopaedic Surgery
M.D. 1965, University of Istanbul, Turkey

John Yun, Fellow in Physiology
B.S. 1963, Tunghai University, Taiwan

Dennis Joseph Zeveney, Jr., Assistant in Surgery
B.S. 1960, King's College, Pennsylvania; M.D. 1966, George Washington University

Hugo Zimmerman, Assistant in Medicine
M.D. 1967, University of Basel, Switzerland

Library

Isabella Frances Young, B.A. in L.S., Librarian, Medical Library



THE SCHOOL OF MEDICINE RECORD 1969-70

Students Registered 1969-70

FIRST YEAR

| | | | |
|--|----------|---|--------|
| Adams, Elizabeth G. B.A. 1966, Wellesley College | Mass | Defranzo, Anthony J. B.S. 1969, Trinity College, Conn. | Conn. |
| Adkins, James W. B.A. 1969, Wesleyan University | Conn. | Earls, Stephen T. Attended George Washington University | Mass. |
| Bader, Robert F. B.A. 1969, University of California, Los Angeles | Calif. | Ehrlich, Dion R. B.A. 1969, Franklin and Marshall College | N.Y. |
| Benio, Joseph C. B.S. 1969, Loyola University of Los Angeles | Calif. | Feller, Patricia A. B.A. 1969, Rutgers, the State University | N.J. |
| Barbiere, Charles F. B.A. 1969, New York University | N.Y. | Flaschetti, Frank L. B.S. 1969, Muhlenberg College | N.Y. |
| Bass, Bernard N. B.A. 1969, George Washington University | Mass. | Frist, Brian S. B.S. 1969, American University | N.Y. |
| Bentley, Wendell J. Attended University of Utah | Utah | Funt, Loren S. Attended George Washington University | Fla. |
| Bishop, Norman R. B.S. 1969, George Washington University | Md. | Gage, John A., Jr. B.S. in Aeronautics and Astronautics 1969, Massachusetts Institute of Technology | Va. |
| Bobrow, Nathan M. Attended George Washington University | Md. | Gersh, Elliot S. B.S. 1969, Ohio State University | Ohio |
| Baran, Luis B.S. 1968, George Washington University | Honduras | Gladstein, Geoffrey S. B.A. 1969, University of Connecticut | Conn. |
| Bollinger, Bruce C. B.S. 1969, George Washington University | Colo. | Goulding, Gerald A. B.A. 1969, Boston University | N.J. |
| Bonhomme, Mireille F. B.S. 1969, American University | Haiti | Gray, William C. B.S. 1969, University of Maryland | Md. |
| Bozell, David W. B.Arch. 1968, Carnegie-Mellon University | Wis. | Hanowell, Ernest D. B.S. 1969, University of California, Davis | Calif. |
| Boyd, Richard B. Attended Boston University | Mass. | Harris, Jeffrey D. B.A. 1968, Hofstra University | N.Y. |
| Brantner, Brian D. B.A. 1968, California Lutheran College | Calif. | Hauptman, Alexander O. B.A. 1967, American University | N.J. |
| Broughton, Warren L. Attended George Washington University | Md. | Heller, Joel H. B.S., B.Pharm. 1968, Rutgers, the State University | N.J. |
| Burstein, Darrell H. B.S. 1969, Trinity College, Conn. | Conn. | Hsieh, Robert C. B.S. 1969, George Washington University | D.C. |
| Callihan, Thomas R. B.A. 1969, Kenyon College | Ohio | Hunter, Bruce C. B.S. 1969, Weber State College | Utah |
| Ceder, Lenart C. B.A. 1969, University of Washington | Wash. | Isaacs, Steven E. B.S. 1967, St. Lawrence University | N.Y. |
| Chase, William D., Jr. B.A. 1969, University of Michigan | Mich. | Javerbaum, Jeffrey S. B.A. 1969, Cornell University | N.J. |
| Coit, Alan S. B.A. 1969, Colby College | Texas | Johnson, Mark Y. B.S. 1969, University of Washington | Wash. |
| Corper, Wayne D. B.A. 1969, Alfred University | N.J. | Kalra, Pamela A. B.S. 1969, State University of New York at Stony Brook | N.Y. |
| Crisco, Robert F. B.S. 1969, Fairfield University | N.J. | | |
| Crick, Thomas R. B.A. 1969, Johns Hopkins University | Pa. | | |

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| Kerns, Scott E. B.S. 1969, University of Michigan | Mich. | Scalottar, Robert E. B.A. 1969, University of Wisconsin | N.Y. |
| Kohl, Cheryl A. B.A. 1969, Duke University | N.J. | Schade, Robert R. B.A. 1969, Colgate University | N.Y. |
| Kolb, Garry R. B.S. 1968, California State Polytechnic College, San Luis Obispo | Calif. | Schliffman, Ronald C. B.A. 1969, George Washington University | N.Y. |
| Krakovitz, Robert W. B.A. 1969, Pennsylvania State University | Pa. | Siemens, Paul T. B.S. 1968, University of Illinois | II |
| Kuhn, Kerry L. Attended George Washington University | N.Y. | Silverman, Eugene D. Attended George Washington University | D.C. |
| Leavitt, Harry D. B.A. 1969, University of Washington | Wash. | Smith, Lois F. B.S. 1969, Dickinson College | Va |
| Loeper, Willard S. Attended Brigham Young University | Calif. | Smolansky, Stephen J. B.A. 1969, Temple University | N.Y. |
| Letterman, Gordon R. Attended American University | Md. | Soben, Arthur L. B.A. 1969, Rutgers, the State University | N.J. |
| Levin, Ronald H. B.A. 1969, Clark University | Conn. | Sokol, Scott K. B.A. 1969, Syracuse University | N.Y. |
| Lewin, Alan A. B.A. 1969, Temple University | N.J. | Spero, Charles R. B.S. 1969, Columbia University | N.J. |
| Lewis, Allan J. B.B.A. 1949, Texas Technological College | Ariz. | Stang, Howard D. B.A. 1969, Rutgers, the State University | Wash. |
| Lewis, David G. B.S. 1969, University of Utah | Utah | Stewart, Barry C. B.A. in B.A. 1962, University of Washington | N.J. |
| Lipsett, Nathan W. B.A. 1969, Kenyon College | N.J. | Sullivan, Timothy P. B.S. 1969, St. Peter's College, N.J. | Md. |
| Liverett, David M. B.A. 1969, University of Virginia | Md. | Sutton, Frederick J. B.A. 1969, Cornell University | Conn. |
| Luria, Alan S. B.A. 1969, University of Michigan | Fla. | Sveda, Sally A. B.A. 1965, Smith College | Ohio |
| Mangan, Kenneth F. B.S. 1969, University of Massachusetts | Mass. | M.S. 1967, Yale University | |
| Manley, Michael D. B.A. 1967, Sacramento State College | Calif. | Sweet, Ronald C. B.S. 1969, Wright State University | Md. |
| Margules, Edward R. B.A. 1968, University of California, Los Angeles | Calif. | Tamagna, Ellen I. B.A. 1969, Goucher College | Md. |
| Mugmon, Marc A. Attended Georgetown University | Md. | Thistlethwaite, Susan J. B.A. 1969, Lycoming College | Pa. |
| Mule, Salvatore B.A. 1969, University of Connecticut | Conn. | Thomas, Thomas, Jr. B.A. 1967, Pennsylvania State University | Md. |
| Myles, Courtland L. B.S. 1968, American University | D.C. | Travers, Charles K., Jr. B.S. 1969, University of Maryland | Calif. |
| Partlow, Kenneth L. Attended University of Washington | Wash. | Tvedt, Robert A. B.A. 1969, Stanford University | Mass. |
| Paszek, Michael J. B.S. 1969, Trinity College, Conn. | Conn. | Uman, Howard M. B.A. 1969, Amherst College | Fla. |
| Pechan, B. Warren B.A. 1969, Cornell University | N.Y. | Van de Water, Donald T. B.S. 1969, George Washington University | Pa. |
| Penhos, Juan C. Attended George Washington University | Argentina | Van der Werf, Joseph N. B.A. 1969, Duke University | Mexico |
| Peters, John R. B.A. 1969, New York University | N.Y. | Villarreal, Fernando A. Attended George Washington University | Md. |
| Powell, Richard M. B.A. 1968, Temple University | Pa. | Webb, David W. B.S. 1969, University of Maryland | W.Va. |
| Prigoleau, George R., Jr. B.S. 1969, South Carolina State College | S.C. | Wex, Timothy G. B.A. 1969, Johns Hopkins University | N.J. |
| Quiggin, Dianne C. B.A. 1968, Muskingum College | Md. | Wilkenfeld, Morris B.A. 1969, Lafayette College | Ohio |
| Ripley, Robert C. B.A. 1968, University of California, Berkeley | Calif. | Wilson, Douglas D. B.S. 1969, Wright State University | Calif. |
| Romano, John F. B.S. 1969, St. Peter's College, N.J. | N.Y. | Wilson, Stephen C. B.S. 1969, University of Southern California | Conn. |
| Rosenthal, Jesse S. B.A. 1969, George Washington University | N.Y. | Wright, Kenneth J. B.S. 1969, Trinity College, Conn. | Md. |
| Ross, Stuart E. B.A. 1969, University of Pennsylvania | D.C. | Yingling, Kao S. B.S. 1969, University of Maryland | Calif. |
| Rumsey, Eugene W. B.A. 1969, San Diego State College | Calif. | Yorke, Joseph S. Attended Fresno State College | N.Y. |
| Saffer, Jeffrey M. B.A. 1969, Dartmouth College | N.J. | Zarchy, Thomas M. B.S. 1969, Trinity College, Conn. | |

SECOND YEAR

| | | | |
|--|-----------|--|--------|
| Adams, Anthony W. B.S. 1968, Virginia Polytechnic Institute | Va | Elam, Kenneth C. B.S. 1968, Muhlenberg College | N.J. |
| Alarcon, Pedro A. De B.A. 1968, Harvard University | Guatemala | Exner, John H. B.S. 1968, College of Idaho | Idaho |
| Althoff, Rodger W. B.A. 1968, Kent State University | Ohio | Fine, Anne Elizabeth H. B.A. 1969, George Washington University | Calif. |
| Ammerman, Bruce J. B.S. 1969, Case Western Reserve University | Md | Fox, Sherman S. B.A. 1968, Johns Hopkins University | N.J. |
| Annos, Thomas B.A. 1968, University of Pennsylvania | Del. | Franklin, John M. B.S. 1968, University of Washington | Wash. |
| Apter, Matthew N. B.S. 1968, Trinity College, Conn. | Conn | Georges, Britton L. B.S. 1968, University of Washington | Wash. |
| Apter, Roy J. B.A. 1968, University of Wisconsin | Wis | Giannuzzi, Vito A. B.S. 1968, George Washington University | N.Y. |
| Barnard, Margaret E. B.S. 1967, Dalhousie University, Canada | Canada | Goldman, Robert L. B.A. 1968, University of Pennsylvania | D.C. |
| Becker, Stuart A. B.A. 1968, Lafayette College | N.J. | Griffiths, Richard C. B.S. 1968, Michigan State University | Va. |
| Bergman, Stuart K. B.A. 1968, University of Virginia | N.J. | Helfgott, Maxwell A. B.A. 1968, Grinnell College | Md. |
| Binder, Marc K. B.S. 1969, Pennsylvania State University | Pa. | Hunter, Robert J. B.A. 1968, Franklin and Marshall College | Pa. |
| Bis, Kathleen A. B.S. 1968, George Washington University | N.J. | Johnson, Steele R. B.A. 1966, University of Washington | Wash. |
| Bissner, Robert A. B.S. 1968, George Washington University | Md | Joseph, Raymond L. B.S. 1968, Ohio State University | Ohio |
| Burdell, Steven P. B.S. 1968, City College, New York | N.Y. | Juel, Randolph W. B.A. 1968, University of Washington | Wash. |
| Brennacco, Ronald R. B.S. 1968, Fairfield University | N.Y. | Kaman, Stuart S. B.A. 1968, Case Western Reserve University | N.Y. |
| Bransfield, Robert C. B.A. 1968, Rutgers, the State University | N.J. | Katlan, Roberta L. B.S. 1968, Simmons College | N.Y. |
| Braga, Charles M. B.A. 1965, University of Pennsylvania | Va. | Katz, Jeffrey I. B.A. 1968, Clark University | N.Y. |
| Brooks, Betty L. Attended University of Michigan | Pa. | Katsen, Jay E. B.A. 1967, George Washington University | D.C. |
| Campbell, Darrell A., Jr. B.S. 1968, Michigan State University | Mich | Kaufman, Joseph H. B.A. 1963, New York University | N.Y. |
| Cernuti, Michael A. B.A. 1966, University of California, Berkeley | Calif | Kestler, Michael A. B.A. 1968, Rutgers, the State University | N.J. |
| Chapin, Donald C. B.A. 1968, Tufts University | Md | Kienling, Brenda R. B.A. 1962, Oberlin College | Va. |
| Covin, John A. B.A. 1968, Gettysburg College | N.Y. | M.A. in Ed. 1964, George Washington University | |
| Craft, J. Carl B.A. 1968, California Western University | Utah | Kimbak, Richard R. B.A. 1967, University of California, Riverside | Calif. |
| Damos, Stephen P. Attended Utah State University of Agriculture and Applied Science | Utah | King, Don R. B.S. 1968, University of Redlands | Calif. |
| Daly, Joseph T. B.A. 1967, University of California, Davis | Calif | Kirby, Richard L. B.A. 1968, University of Delaware | Del. |
| Davis, Christopher J. B.S. 1968, Massachusetts Institute of Technology | Calif | Knauson, Homer E. B.S. 1968, Brigham Young University | Va. |
| De Figueredo, Paul D. B.S. 1966, Stanford University | Portugal | Korengold, George M. B.A. 1968, University of Pennsylvania | Md. |
| Dent, H. Jay B.S. 1968, University of Washington | Wash. | Kraut, Eric H. B.A. 1968, Franklin and Marshall College | N.J. |
| Diaz, Carlos R. B.A. 1968, Johns Hopkins University | Md | Kravitz, Paul H. B.S. 1968, George Washington University | N.Y. |
| Donaldson, Mary M. B.A. 1968, Sweet Briar College | Md | Krzyzkowski, Michael J. B.S. 1968, Wagner College | N.J. |
| Doochue, Dennis J. B.S. 1966, St. John's University, N.Y. | Md | Leva, Leo M. B.A. 1968, Swarthmore College | Wis. |
| Ehrlich, Leonard D. B.A. 1968, Hunter College | N.Y. | Leventhal, Stuart P. B.S. 1968, University of Pittsburgh | N.J. |
| Eisenbaum, Allan M. B.A. 1969, George Washington University | N.Y. | Lichtenstein, Alan K. B.A. 1968, Brooklyn College | N.Y. |
| | | Loube, Julian M. B.A. 1968, George Washington University | Md |

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|--|--------|---|--------|
| Macht, Steven D. B.S. 1965, D.D.S. 1969, University of Maryland | Md. | Schenk, Joseph H. B.A. 1968, LaSalle College | Md. |
| Magee, William P., Jr. D.D.S. 1969, University of Maryland | N.J. | Scherf, Chrisman G. B.S. 1968, Duke University | N.Y. |
| Marion, Edward D. B.A. 1969, George Washington University | N.Y. | Schulz, Robert W. Attended George Washington University | Pa. |
| McCarthy, Patrick J. B.A. 1968, LaSalle College | Md. | Schweitz, Michael C. B.A. 1969, George Washington University | Md. |
| McClenathan, James H. Attended Carnegie-Mellon University | Md. | Selsby, Marc A. B.A. 1968, State University of New York at Binghamton | N.Y. |
| Monteverde, Ronald P. B.S. 1968, St. Peter's College, N.J. | N.Y. | Seltzer, Shalom D. Attended Tulane University of Louisiana | D.C. |
| Mowery, James H. B.A. 1968, Northwestern University | Ill. | Shreeve, Thomas L. B.A. 1968, Franklin and Marshall College | Md. |
| Nash, Carl R. B.S. 1968, Yale University | N.J. | Sklaver, Allen R. B.A. 1968, Williams College | Conn. |
| Nickens, Wayne C. B.S. 1968, Howard University | D.C. | Snover, Seth W. B.S. 1968, Muhlenberg College | Pa. |
| Nierman, Robert S. B.A. 1968, Boston University | Mass. | Sonkens, Jerry W. B.S. 1967, Brigham Young University | Iowa |
| Noble, Donald E. B.A. 1968, George Washington University | Md. | Street, Thomas F. B.S. 1968, John Carroll University | N.J. |
| Olda, Corwin A. B.S. 1947, U.S. Naval Academy B.S. in M.E. 1955, M.S. in M.E. 1956, U.S. Naval Postgraduate School | Calif. | Surrey, Mark W. B.S. 1968, University of Pittsburgh | D.C. |
| Oliff, Michael B.A. 1968, Rutgers, the State University | N.J. | Swensen, Laird S. B.A. 1968, Brigham Young University | Utah |
| Orman, Ronald J. Attended University of Montana | Mont. | Theard, Franz C. B.A. 1968, Catholic University of America | Haiti |
| Parker, Frederick W., III B.S. 1968, University of Scranton | Pa. | Thompson, Charles E., Jr. B.A. 1968, University of Washington | Wash. |
| Paul, David A. B.A. 1968, Rutgers, the State University | Md. | Thomson, Stephen T. B.S. 1968, Brigham Young University | Utah |
| Pearson, Michael L. B.S. 1968, Washington State University | Wash. | Thornton, Abigail G. B.S. 1965, M.S. 1967, George Washington University | D.C. |
| Peck, Dennis F. B.A. 1968, University of Washington | Wash. | Warchol, Richard J. B.A. 1967, Millikin University | Mass. |
| Pittbury, Harold C., III Attended George Washington University | Md. | Weil-Malherbe, Jacqueline V. B.A. 1968, Antioch College | Md. |
| Powell, Thomas R. B.A. 1968, Boston University | N.Y. | Whitcraft, Daniel D., III B.A. 1968, University of California, Los Angeles | Calif. |
| Reff, Richard B. B.A. 1969, George Washington University | Md. | Williams, Terry E. B.S. 1967, University of Maryland | Md. |
| Roe, James B. B.A. 1966, Stanford University | Ill. | Winston, David H. B.A. 1968, State University of New York at Binghamton | N.Y. |
| Rotstein, Martha B.S. 1968, Simmons College | Mass. | Zimmerman, Larry G. B.S. 1968, Colorado State University | Colo. |

THIRD YEAR

| | | | |
|--|-------|---|--------|
| Abbott, Richard L. B.S. 1967, Tufts University | N.Y. | Boyd, William D., II B.S. 1967, University of Maryland | Md. |
| Adam, George B.A. 1967, New York University | N.Y. | Brancaccio, Michael B.S. 1967, Fairfield University | N.Y. |
| Aldrich, Stephen M. B.A. 1967, Whitman College | Wash. | Brener, George A. B.A. 1967, Boston University | Mass. |
| Allan, Robert J. B.S. 1967, Brigham Young University | Utah | Browne, Allen F. B.A. 1967, Brown University | Calif. |
| Allgaier, Wayne B.S. 1967, Brigham Young University | Va. | Browne, Madonna E. B.S. 1964, Duke University | Maine |
| Babcock, Terence L. B.S. 1967, George Washington University | Md. | Brunt, Roger S. B.S. 1967, Brigham Young University | Idaho |
| Barnes, Patricia J. B.A. 1966, Gettysburg College | N.J. | Bush, Frank J. B.A. 1967, University of Maine | Mass. |
| Bikowski, Joseph B., Jr. B.A. 1967, LaSalle College | Md. | Carson, Cully C. B.S. 1967, Trinity College, Conn. | Conn. |

STUDENTS REGISTERED 141

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|---|--------|---|--------|
| Chabaliko, John J. B.S. 1967, Muhlenberg College | Pa. | Gross, Howard J. B.S. 1967, Tufts University | N.Y. |
| Charlton, Brian L. B.A. 1967, Western Maryland College | Md. | Hanscom, Jane S. B.A. 1967, University of Maine | Maine |
| Chrisman, Allan K. B.A. 1967, Lafayette College | Md. | Harris, Robert J. B.A. 1968, George Washington University | Md. |
| Clark, John I. B.A. 1967, Franklin and Marshall College | Md. | Holmes, John S. B.A. 1967, San Fernando Valley State College | Calif. |
| Clary, John B. B.S. 1967, Niagara University | N.Y. | James, William S. B.A. 1967, Johns Hopkins University | N.J. |
| Cleveland, Marcia C. B.S. 1967, Parsons College | Va. | Jan, Ronald G. B.S. 1965, University of California, Berkeley | Calif. |
| Corr, Charles A. B.A. 1967, Wesleyan University | Conn. | Kline, Philip S., Jr. B.A. 1965, University of Texas at Austin | D.C. |
| Costa, Jack M. B.A. 1967, Gettysburg College | N.J. | Kuhr, Susan E. B.A. 1967, Yeshiva University | Ohio |
| Crawford, Joseph A. B.S. in E.E. 1960, Case Western Reserve University | N.Y. | Kurstin, Ronald D. B.A. 1967, Tulane University of Louisiana | Texas |
| Crossland, Stanley G. B.S. 1967, University of Richmond | Va. | Lee, Martin B.A. 1966, Columbia University | N.Y. |
| Danzig, Paul I. Attended Rensselaer Polytechnic Institute | N.Y. | Levy, Arnold G. B.A. 1968, George Washington University | Del. |
| Darr, David L. B.S. 1967, Muhlenberg College | N.J. | Lojko, Edwin P. B.A. 1967, University of Virginia | Mass. |
| Delmonico, Francis L. B.S. 1966, Mount St. Mary's College, Md | N.Y. | McBeath, John B. Attended San Jose State College | Nev. |
| Dicus, Paul E. Attended University of Arizona | Ariz. | Mendelson, Michael B.A. 1965, C.W. Post College | N.Y. |
| Fine, Paul M. B.A. 1968, George Washington University | Md. | Minars, Norman B.A. 1967, New York University | N.Y. |
| Fitz-Henley, Norman H. Attended City College, New York | N.Y. | Moritsugu, Kenneth P. B.A. 1967, University of Hawaii | Hawaii |
| Frank, Sidney A. B.A. 1967, Bowdoin College | Mass. | Newton, Roger B.A. 1967, Yale University | Tenn. |
| Furrow, Thomas W., Jr. B.A. 1968, George Washington University | Md. | Owens, David E. B.A. 1964, Wesleyan University | Pa. |
| Gardner, James S. B.S. 1967, Trinity College, Conn. | Mass. | M.S. 1965, University of Connecticut | |
| Garner, Steven C. B.A. 1967, University of Massachusetts | Mass. | Pash, Robert M. B.A. 1967, Gettysburg College | N.J. |
| Gens, John P., Jr. B.S. 1967, Trinity College, Conn. | Conn. | Pett, Stephen D. B.S. 1967, Seton Hall University | N.J. |
| Gerstein, Jared D. B.A. 1967, New York University | N.Y. | Polk, Norman O. B.A. 1967, Harvard University | D.C. |
| Gibbons, Gary R. B.S. 1967, Utah State University of Agriculture and Applied Science | Utah | Potenza, Anthony R. Attended University of Pittsburgh | N.Y. |
| Gibson, Douglas W. B.S. 1966, Wagner College | N.Y. | Pugatch, Robert D. B.A. 1967, Johns Hopkins University | N.Y. |
| Glowitz, Robert J. B.S. 1967, University of Maryland | Md. | Rainey, Edward C. B.S. 1967, George Washington University | Nebr. |
| Goldberg, Constance L. B.S. 1966, Pennsylvania State University | Md. | Reed, Barry S. B.A. 1967, University of Washington | Wash. |
| Goldstein, Howard S. B.A. 1967, Colgate University | N.J. | Rein, Richard A. B.A. 1967, University of Rochester | Md. |
| Goodman, Clifford J., Jr. Attended Arizona State University | Ariz. | Rensman, Jerald L. B.S. 1967, University of Michigan | Ohio |
| Gorman, Barry C. B.S. 1967, Tufts University | Conn. | Roe, Lynn Diane B.A. 1967, Stanford University | Calif. |
| Greenwood, Mark W. B.A. 1967, University of Utah | Utah | Romig, Bruce B.S. 1967, Duke University | Va. |
| Griggs, David L. B.A. 1966, Northwestern University | Calif. | Rosenberg, Robert L. B.A. 1968, George Washington University | N.J. |
| Grimm, Ronald A. B.A. 1967, George Washington University | D.C. | Ross, David B. B.S. 1967, Cornell University | N.Y. |
| Grogan, Thomas M. B.A. 1967, University of Virginia | Va. | Ruben, Richard S. B.A. 1967, Northwestern University | Pa. |
| Gromet, Michael A. B.A. 1967, New York University | N.Y. | Schlachter, Steven A. B.S. 1967, St. Peter's College, N.J. | N.J. |
| | | Schramm, Melinda M. B.S. 1967, Wheaton College, Ill. | Pa. |

142 SCHOOL OF MEDICINE

| | | | |
|--|----------|---|-------------|
| Schulman, Brian M. | N.Y. | Ungar, James R. | N.J. |
| B.A. 1968, George Washington University | | B.A. 1967, George Washington University | |
| Schultz, Verna E. | Md | Urrutia-S., Carlos O. | El Salvador |
| B.A. 1968, George Washington University | | B.S. 1966, Georgetown University | |
| Shapiro, Leslie A. | N.Y. | Van Devanter, Stephen H. | Md. |
| B.A. 1967, New York University | | Attended George Washington University | |
| Smith, Howard N. | N.J. | Viener, Robert S. | D.C. |
| B.S. 1967, St. Peter's College, N.J. | | B.A. 1967, University of Pennsylvania | |
| Sonne, David D. | Calif | Watt, Albert J. | Ohio |
| B.S. 1968, University of Utah | | B.A. 1967, Brown University | |
| Spector, Robert H. | N.Y. | Weiss, Richard W. | N.Y. |
| B.A. 1967, Franklin and Marshall College | | B.A. 1966, Cornell University | |
| Starkweather, Roger J. | Va. | Whitley, Richard J. | N.J. |
| B.A. 1967, Northwestern University | | B.A. 1967, Duke University | |
| Strauss, Barry L. | N.Y. | Woodward, Roger S. | Calif |
| B.A. 1967, Cornell University | | B.A. 1966, Stanford University | |
| Tan, Edwin C. | Thailand | Yip, Larry | Wash. |
| B.S. 1967, Mount Union College | | B.S. 1967, University of Washington | |
| Tardiff, Jeffrey G. | N.J. | Yoder, Paul T. | Va. |
| B.A. 1966, St. Michael's College | | B.S. 1967, Eastern Mennonite College | |
| Tauber, Ira | N.Y. | Zeminski, John J. | N.J. |
| B.A. 1967, Brooklyn College | | B.S. 1967, Fordham University | |
| Travis, Barbara B. | Md. | | |
| B.A. 1967, Bryn Mawr College | | | |

FOURTH YEAR

| | | | |
|---|----------------|---|--------|
| Akerle, Flavius A. | Nigeria | Fine, Robert M. | Md. |
| B.A. 1966, Boston University | | B.A. 1967, George Washington University | |
| Altfas, Jules R. | Ariz | Ford, Gerald P. | N.Y. |
| B.A. 1966, Arizona State University | | B.A. 1965, Brigham Young University | |
| Anderson, Robert | Mich | Frels, Peter C., Jr. | N.J. |
| B.S. 1966, Michigan State University | | B.S. 1966, St. Peter's College, N.J. | |
| Andrus, Joseph M. | Ky | Gardstein, Henry F., Jr. | N.Y. |
| B.S. 1965, Stanford University | | B.A. 1966, Franklin and Marshall College | |
| Ascarelli, David E. | N.Y. | Gieret, Robert J. | N.J. |
| B.S. 1966, State University of New York at Albany | | B.A. 1962, Rutgers, the State University | |
| Bageant, Thomas E. | D.C. | M.A. 1966, Ph.D. 1967, Stanford University | |
| B.A. 1966, Western Maryland College | | Gerkin, Peter R. | N.J. |
| Balacki, John A. | N.Y. | Attended Temple University | |
| B.S. 1966, Canisius College | | Goldberg, Jay S. | N.Y. |
| Barefoot, Sherwood, W., Jr. | N.C. | B.A. 1966, State University of New York at Binghamton | |
| B.A. 1963, Duke University | | Goranson, Eric I. | Wash. |
| Benkovic, Gregory W. | Conn. | B.S. 1966, Washington State University | |
| B.A. 1966, Johns Hopkins University | | Guyton, Kathryn K. | N.J. |
| Bonar, Robert W. | Idaho | B.S. 1966, Juniata College | |
| B.S. 1966, College of Idaho | | Hartz, Charles R. | Mont. |
| Burton, Ronald C. | Utah | B.A. 1966, Concordia College, Moorhead, Minn. | |
| B.S. 1965, University of Utah | | Heinze, Robert G. | Md. |
| Canon, Dennis L. | N.M. | B.S. 1965, George Washington University | |
| B.S. 1966, University of Arizona | | Herndon, S. Paul, IV | Ga. |
| Ceavatta, Andrew A., Jr. | Pa. | B.S. 1966, Georgetown University | |
| B.A. 1966, Franklin and Marshall College | | Higgins, Thomas L. | N.J. |
| Cermela, Nicholas A. | Ohio | B.S. 1966, Fordham University | |
| B.S. 1965, University of Pittsburgh | | Hill, Malcolm D. | Calif |
| Christian, Donna-Marie T. | Virgin Islands | B.S. 1965, Stanford University | |
| B.S. 1966, St. Mary's College, Ind. | | Hines, Edward L. | Conn. |
| Clark, Leo Joseph P. | N.J. | D.D.S. 1967, Columbia University | |
| B.S. 1966, University of Notre Dame | | Hinch, Jack H. | Pa. |
| Davis, Gerald F. | N.Y. | B.A. 1966, Washington and Jefferson College | |
| B.S. 1966, University of Missouri | | Hoart, Barbara R. | Calif. |
| Dejameret, James W. | Wash. | B.A. 1966, University of Pennsylvania | |
| B.A. 1966, University of Washington | | Hoels, John C. | N.J. |
| Edwards, George G., Jr. | Calif. | B.A. 1966, California Lutheran College | |
| B.A. 1966, San Jose State College | | Hupety, Jon S. | Calif. |
| Edwards, Maureen C. | D.C. | B.A. 1966, Brown University | |
| B.S. 1966, Marquette University | | Husted, Roger C. | |
| Emmett, John R. | Fla. | B.S. 1966, Brigham Young University | |
| B.S. 1965, Georgia Institute of Technology | | | |

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|---|-----------|---|--------|
| Jeppson, Taylor A. B.A. 1966, University of Utah | Utah | Redd, Burton L. B.S. 1967, University of Utah | Texas |
| Jetton, Norman B. B.A. 1967, George Washington University | Md | Rogers, John S., II B.S. 1966, University of Maryland | Md |
| Jones, Michael R. B.A. 1966, Franklin and Marshall College | N.J. | Rytting, Richard M. B.S. 1966, University of Utah | Utah |
| Kanda, Louis T. B.A. 1966, University of California, Los Angeles | Congo | Santangelo, Salvatore C. B.A. 1965, Catholic University of America | Conn |
| Katona, John J. B.S. 1965, Pennsylvania State University | N.Y. | Sappington, Joseph B. B.S. 1965, Georgetown University | Md |
| Kent, Wilburn W.L. B.A. 1966, Johns Hopkins University | Miss | Schnur, Anita K. B.A. 1965, Rutgers, the State University | N.J. |
| Kowick, Rodney B. B.S. 1966, University of Washington | Mont | Sciallis, Gabriel F. B.A. 1966, Rutgers, the State University | N.J. |
| Lamb, Ronald B. B.S. 1966, University of Redlands | Calif | Scott, Samuel J., Jr. B.S. 1966, George Washington University | Va |
| Law, Charles E., Jr. B.S. 1966, George Washington University | Va | Segall, Marc R. Attended Franklin and Marshall College | N.J. |
| Lewis, Paul E., II B.A. 1966, Johns Hopkins University | Md | Singer, Robert J. B.S. 1966, Pennsylvania State University | N.J. |
| Lewis, Richard A. B.A. 1966, Queens College, N.Y. | N.Y. | Smith, Charles I. B.S. 1966, Syracuse University | N.Y. |
| Long, Jon F. B.S. 1965, University of Arizona | Ariz | Snyder, Charles E. B.A. 1966, West Virginia University | W. Va |
| Lyles, John W., Jr. B.M.E. 1964, Cornell University | Md | Sommer, Michael S. B.A. 1959, M.A. 1964, George Washington University | Md |
| Lynch, William S. B.S. 1966, University of Notre Dame | Ohio | Strunk, Harold P. B.A. 1966, Yale University | Pa |
| MacLaughlin, Winthrop S., Jr. B.S. in Phar. 1966, Fordham University | Conn | Suetsugu, Ralph T. B.A. 1966, Johns Hopkins University | Hawaii |
| Marshall, Warren C., II B.S. 1966, Pennsylvania State University | N.J. | Sullivan, Patrick J. Attended Catholic University of America | Fla |
| Menchey, Milton J. B.A. 1966, San Diego State College | Calif | Sunsman, Michael E. B.A. 1966, Franklin and Marshall College | N.J. |
| Mewha, Malcolm K. B.A. 1966, University of Pennsylvania | Pa | Taylor, Richard L., Jr. Attended Northwestern University | Ohio |
| Miller, Paul D. B.A. 1965, Gettysburg College | Pa | Thomas, Paul J. B.S. 1966, University of Maryland | Md |
| Mitchell, Paul R. B.A. 1966, University of Massachusetts | Mass | Wagshal, Eric M. B.A. 1967, George Washington University | D.C. |
| Moeser, Thomas E. B.A. 1967, George Washington University | Md | Ward, Richard L. B.S. 1966, Brigham Young University | Idaho |
| Muth, Warren F. B.A. 1964, Gettysburg College | N.Y. | Washburn, Michael D. Attended University of Utah | Utah |
| Odere, Fred G. B.S. 1966, Carnegie-Mellon University | N.Y. | Wasilauskas, Victor P., Jr. B.S. 1966, Mount St. Mary's College, Md | Conn |
| Oram, Alan J. B.S. 1966, Mount St. Mary's College, Md | Pa | Weinstein, Melvin P. B.A. 1966, Rutgers, the State University | N.J. |
| Osborne, Robert C. B.A. 1966, University of California, Los Angeles | Calif | Welch, Joseph D. B.A. 1966, Johns Hopkins University | N.Y. |
| Palmer, Robert C. B.S. 1966, University of New Mexico | N.M. | Whalen, Richard M. B.S. 1966, Montana State University | Mont |
| Pan, John C. B.S. 1966, University of Notre Dame | Hong Kong | Wojcik, John D. B.S. 1966, Georgetown University | N.J. |
| Paul, Philip B.A. 1964, Brandeis University | N.Y. | Woodard, Craig D. B.A. 1966, Johns Hopkins University | N.Y. |
| Pugaley, George C. B.S. 1966, University of Utah | Utah | Wooten, Michael B. Attended Washington State University | Va. |

Summaries of Registration 1969-70

NUMBER OF REGISTRANTS

| | | | |
|--------------------------|-----|--------------------------|-----|
| Class entering 1969..... | 115 | Class entering 1967..... | 107 |
| Class entering 1968..... | 111 | Class entering 1966..... | 99 |

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

| | | | |
|----------------------------|----|----------------------|----|
| Arizona | 5 | North Carolina | 1 |
| California | 35 | Ohio | 12 |
| Colorado | 2 | Pennsylvania | 21 |
| Connecticut | 20 | South Carolina | 1 |
| Delaware | 3 | Tennessee | 3 |
| District of Columbia | 17 | Texas | 15 |
| Florida | 6 | Utah | 18 |
| Georgia | 1 | Virginia | 17 |
| Hawaii | 2 | Washington | 1 |
| Idaho | 4 | West Virginia | 2 |
| Illinois | 3 | Wisconsin | 1 |
| Iowa | 1 | Virgin Islands | 1 |
| Kentucky | 1 | Argentina | 1 |
| Maine | 2 | Canada | 1 |
| Maryland | 61 | Congo | 1 |
| Massachusetts | 16 | El Salvador | 1 |
| Michigan | 4 | Guatemala | 2 |
| Mississippi | 1 | Haiti | 1 |
| Montana | 4 | Honduras | 1 |
| Nebraska | 1 | Hong Kong | 1 |
| Nevada | 1 | Mexico | 1 |
| New Jersey | 58 | Nigeria | 1 |
| New Mexico | 2 | Portugal | 1 |
| New York | 75 | Thailand | 1 |

INSTITUTIONS IN WHICH SCHOOL OF MEDICINE STUDENTS
EARNED DEGREES

| | | | |
|---|----|---|----|
| Alfred University | 1 | Clark University | 1 |
| American University | 4 | Colby College | 2 |
| Amherst College | 1 | Colgate University | 1 |
| Antioch College | 1 | Colorado State University | 4 |
| Arizona State University | 1 | Columbia University | 1 |
| Arizona, University of | 2 | Concordia College, Moorhead, Minn. | 3 |
| Boston University | 5 | Connecticut, University of | 7 |
| Bowdoin College | 1 | Cornell University | 1 |
| Brandeis University | 1 | Dalhousie University, Canada | 1 |
| Brigham Young University | 10 | Dartmouth College | 1 |
| Brooklyn College | 2 | Delaware, University of | 7 |
| Brown University | 3 | Dickinson College | 1 |
| Bryn Mawr College | 1 | Duke University | 3 |
| C.W. Post College | 1 | Eastern Mennonite College | 3 |
| California Lutheran College | 2 | Fairfield University | 10 |
| California State Polytechnic College, San Luis Obispo | 1 | Fordham University | 32 |
| California, University of, Berkeley | 3 | Franklin and Marshall College | 4 |
| California, University of, Davis | 2 | George Washington University | 1 |
| California, University of, Los Angeles | 5 | Georgetown University | 6 |
| California, University of, Riverside | 1 | Georgia Institute of Technology | 1 |
| California Western University | 1 | Gettysburg College | 1 |
| Canisius College | 1 | Goucher College | 2 |
| Carnegie-Mellon University | 2 | Grinnell College | 1 |
| Case Western Reserve University | 3 | Harvard University | 1 |
| Catholic University of America | 2 | Hawaii, University of | 1 |
| | | Hofstra University | 1 |

| | | | |
|---|----|--|----|
| Howard University | 1 | Rutgers, the State University | 13 |
| Hunter College | 1 | Sacramento State College | 1 |
| Idaho, College of | 2 | St. John's University, N.Y. | 1 |
| Illinois, University of | 1 | St. Lawrence University | 1 |
| Johns Hopkins University | 13 | St. Mary's College, Ind. | 1 |
| Juniata College | 1 | St. Michael's College | 1 |
| Kent State University | 1 | St. Peter's College, N.J. | 6 |
| Kenyon College | 2 | San Diego State College | 2 |
| Lafayette College | 3 | San Fernando Valley State College | 1 |
| LaSalle College | 3 | San Jose State College | 1 |
| Loyola University of Los Angeles | 1 | Scranton, University of | 1 |
| Lycoming College | 1 | Seton Hall University | 1 |
| Maine, University of | 2 | Simmons College | 2 |
| Marquette University | 1 | Smith College | 1 |
| Maryland, University of | 11 | South Carolina State College | 1 |
| Massachusetts Institute of Technology | 2 | Southern California, University of | 1 |
| Massachusetts, University of | 3 | Stanford University | 8 |
| Michigan State University | 3 | Swarthmore College | 1 |
| Michigan, University of | 4 | Sweet Briar College | 1 |
| Millikin University | 1 | Syracuse University | 2 |
| Missouri, University of | 1 | Temple University | 3 |
| Montana State University | 1 | Texas Technological College | 1 |
| Mount St. Mary's College, Md. | 3 | Texas, University of, at Austin .. | 1 |
| Mount Union College | 1 | Trinity College, Conn. | 9 |
| Muhlenberg College | 5 | Tufts University | 4 |
| Muskingum College | 1 | Tulane University of Louisiana .. | 1 |
| New Mexico, University of | 1 | U.S. Naval Academy | 1 |
| New York, City College | 1 | U.S. Naval Postgraduate School .. | 1 |
| New York, State University of, at Albany | 1 | Utah State University of Agriculture and Applied Science | 1 |
| New York, State University of, at Binghamton | 3 | Utah, University of | 8 |
| New York, State University of, at Stony Brook | 1 | Virginia Polytechnic Institute | 1 |
| New York University | 8 | Virginia, University of | 4 |
| Niagara University | 1 | Wagner College | 2 |
| Northwestern University | 4 | Washington and Jefferson College .. | 1 |
| Notre Dame, University of | 3 | Washington State University | 2 |
| Oberlin College | 1 | Washington, University of | 15 |
| Ohio State University | 2 | Weber State College | 1 |
| Parsons College | 1 | Wellesley College | 1 |
| Pennsylvania State University | 7 | Wesleyan University | 3 |
| Pennsylvania, University of | 8 | West Virginia University | 1 |
| Pittsburgh, University of | 3 | Western Maryland College | 2 |
| Queens College, N.Y. | 1 | Wheaton College, Ill. | 1 |
| Redlands, University of | 2 | Whitman College | 1 |
| Richmond, University of | 1 | Williams College | 1 |
| Rochester, University of | 1 | Wisconsin, University of | 2 |
| | | Wright State University | 2 |
| | | Yale University | 4 |
| | | Yeshiva University | 1 |

Number of College Graduates 397 Number of Colleges Represented... 144

Recipients of the Degree of Doctor of Medicine, June 8, 1969

Name, State of Residence, Degrees Held

John David Anderson, Texas

Jeffrey Roy Ashkin, New York

B.A. 1965, Clark University

Mark Jay Atkins, New Jersey

B.A. 1966, University of Rochester

Michael Berger, New York

B.S. 1965, Tufts University

Warren Richard Berrie, California

B.A. 1964, Stanford University

Frederick Charles Blades, New Jersey

B.A. 1965, University of Maine

Susan Montella Bland, Maryland

B.S. 1965, George Washington University

Matthew David Blum, Pennsylvania

B.A. 1964, La Salle College

Don Howard Bodley, Montana

B.S. 1965, Montana State University

Frank John Boruch, New Jersey

B.S. 1965, St. Peter's College, N.J.

James Gelston Boyd, Jr., Massachusetts

B.A. 1964, Boston University

Nancy Dee Briggs, Virginia

B.A. 1964, Sweet Briar College

Brooks Gideon Brown III, Maryland

B.A. 1965, George Washington University

Richard Bruce Brown, New York

B.S. 1965, Tufts University

Richard Bowman Cannon, Utah

B.A. 1965, University of Utah

Michael Allen Chorchos, Connecticut

B.A. 1965, Boston University

Martin Irvin Cohen, New York

B.A. 1965, Adelphi University

Paul Joseph Corso, Jr., West Virginia

B.A. 1966, George Washington University

Kenneth Clark Cummings, Jr., California

B.S. 1965, George Washington University

Paul Hartman D'Amato, Maryland

(With Distinction)

B.A. 1965, Rutgers, the State University

Richard Nelson Dove, Maryland

B.A. 1965, Columbia University

Depue Hazen Dufley, Jr., Virginia

B.S. 1965, American University

Arthur Jackson Speer Eberdt, Virginia

B.A. 1959, Duke University

Daniel Howard Eudaily, Montana

B.S. 1966, Montana State University

Jose Manuel Fabrega, Panama

Bethanne Foley, Louisiana

B.A. 1963, Chestnut Hill College

Kenneth Jay Forman, Pennsylvania

B.A. 1964, University of Pennsylvania

Gary Michael Franklin, Maryland

B.A. 1965, Franklin and Marshall College

Leonard Makolm Friedman, Alabama

B.A. 1965, University of Pennsylvania

Stephen Frist, New York

Peter Nicholas Givvan, California

B.A. 1965, Occidental College

Robert David Goldhamer, California

B.S. 1965, George Washington University

Internship Appointment

University of California Hospital, Los Angeles, Calif.

Hartford Hospital, Hartford, Conn.

Harlem Hospital Center, New York, N.Y.

Mt. Sinai Hospital, New York, N.Y.

Washington Hospital Center, Washington, D.C.

Naval Hospital, Portsmouth, Va.

Washington Hospital Center, Washington, D.C.

Children's Hospital, Washington, D.C.

Denver General Hospital, Denver, Colo.

U.S. Public Health Service Hospital, Boston, Mass.

Hospital of the Good Samaritan, Los Angeles, Calif.

Washington Hospital Center, Washington, D.C.

Cleveland Clinic Hospital, Cleveland, Ohio

New England Medical Center Hospital, Boston, Mass.

Virginia Mason Hospital, Seattle, Wash.

Emory University Hospital, Atlanta, Ga.

Washington Hospital Center, Washington, D.C.

George Washington University Hospital and D.C. General Hospital, Washington, D.C.

Santa Clara Valley Medical Center, San Jose, Calif.

William A. Shands Teaching Hospital, University of Florida College of Medicine, Gainesville, Fla.

Highland General Hospital, Oakland, Calif.

Naval Hospital, Portsmouth, Va.

Washington Hospital Center, Washington, D.C.

Forsyth Memorial Hospital, Winston-Salem, N.C.

New York Hospital, Cornell Medical Center, New York, N.Y.

Columbia Presbyterian Hospital, New York, N.Y.

Albert Einstein Medical Center, Philadelphia, Pa.

Research and Education Hospital, University of Illinois, Chicago, Ill.

George Washington University Hospital and D.C. General Hospital, Washington, D.C.

George Washington University Hospital, Washington, D.C.

Los Angeles County General Hospital, Los Angeles, Calif.

Robert Packer Hospital, Sayre, Pa.

Name, State of Residence, Degrees Held

Michael G. Goldstein, California

Michael Richard Greenberg, Pennsylvania

Jay Robert Grossman, Pennsylvania
B.A. 1965, Temple University

Leonard Jesse Grossman, New Jersey
B.A. 1965, Vanderbilt University

Patricia Frances Heldman, California
B.A. 1965, University of California, Berkeley

Michael Harold Hitchcock, Minnesota
B.A. 1965, University of Minnesota

Brian Charles Holober, Maryland
B.A. 1966, George Washington University

Michael Sidney Horowitz, New York
(With Distinction)

B.A. 1965, Colgate University

Heide Bille Horaley, California
B.A. 1960, Pasadena City College

B.S. 1962, University of California, Berkeley

Allen Willis Jackson, Maryland
B.S. 1965, George Washington University

Richard Matthias Jacoby, District of Columbia
B.E.E. 1964, University of Virginia

Edward Gabbott Jenkins, Utah
B.S. 1965, University of Utah

Robert Wolfe Kahn, New York
B.A. 1965, Kenyon College

Edward Graeme Koch, California
B.A. 1964, M.A. 1965, University of

California, Los Angeles

Marvin Edward Kodish, Ohio
B.S. 1966, University of Akron

Irwin Henry Koff, New York
(With Distinction)

B.A. 1965, Hofstra University

Berry Alan Kriegsfeld, Arizona
B.A. 1965, University of Pennsylvania

Gary Kim Langstaff, Colorado
B.A. 1962, University of Colorado

David Edmund Larson, Minnesota
B.A. 1964, Dartmouth College

Peter Howard Levine, Connecticut
B.S. 1963, Massachusetts Institute of Technology

Lawrence Michael Levinson, New York
B.A. 1965, Cornell University

Robert Alan Lieberman, New York
B.S. 1965, City College, New York

Frederick Alton Lloyd, Jr., Massachusetts
B.A. 1965, University of Massachusetts

Richard Sheldon Margolis, Virginia
B.S. 1965, Pennsylvania State University

Thomas Clinton McNamara, Pennsylvania
B.A. 1965, University of Virginia

Robert Millman, Maryland
B.A. 1966, George Washington University

John Wayne Mitchell, Jr., Virginia
B.A. 1965, Duke University

Robert William Murray, California
B.A. 1965, Stanford University

David Vance Noonan, Virginia
B.A. 1966, George Washington University

Beverly Ann Oliphant, Maryland
(With Distinction)

B.S. 1960, Mississippi State University

M.S. 1964, University of Florida

Donald Julian Orleans, Maryland
B.A. 1965, Franklin and Marshall College

Internship Appointment

Washington Hospital Center, Washington,
D.C.

York Hospital, York, Pa.

Children's Hospital, San Francisco, Calif.

Mt. Sinai Hospital, New York, N.Y.

Flower and Fifth Avenue Hospitals, New

York Medical College, New York, N.Y.

George Washington University Hospital and

D.C. General Hospital, Washington, D.C.

Herrick Memorial Hospital, Berkeley, Calif.

Bronx Municipal Hospital Center,

New York, N.Y.

Children's Hospital, Washington, D.C.

Providence Hospital, Seattle, Wash.

Evanston Hospital, Evanston, Ill.

Children's Hospital, Los Angeles, Calif.

Washington Hospital Center, Washington,

D.C.

George Washington University Hospital,

Washington, D.C.

Ohio State University Hospital, Columbus,

Ohio

U.S. Public Health Service Hospital,

San Francisco, Calif.

George Washington University Hospital

and D.C. General Hospital, Washington,

D.C.

Robert Packer Hospital, Sayre, Pa.

Milwaukee County Hospital, Milwaukee,

Wis.

Washington Hospital Center, Washington,

D.C.

George Washington University Hospital,

Washington, D.C.

Beth Israel Hospital, New York, N.Y.

Kaiser Foundation Hospital, San

Francisco, Calif.

Washington Hospital Center, Washington,

D.C.

Vanderbilt Hospital, Nashville, Tenn.

Washington Hospital Center, Washington,

D.C.

Children's Hospital, Washington, D.C.

Medical Center Hospital of Vermont,

Burlington, Vt.

Washington Hospital Center, Washington,

D.C.

Veterans Administration Hospital,

Washington, D.C.

Washington Hospital Center, Washington,

D.C.

Name, State of Residence, Degrees Held

Robert Clayton Pace, Utah
 B.A. 1965, University of Utah
 Robert Harry Patterson, Virginia
 B.A. 1965, Bridgewater College
 Thomas Summers Reich, California

 Robert Michael Roberts, New Jersey
 B.A. 1965, Lafayette College
 Douglas Neil Robins, Maryland
 B.S. 1965, Washington and Lee University
 Emilio Jesus Rodriguez-Viera, Puerto Rico
 B.A. 1965, Boston University
 David Matthew Rubenstein, Connecticut
 B.A. 1964, University of Minnesota
 Peter Gordon Sack, New Jersey
 B.A. 1965, Columbia University
 Marc Roger Sanders, Oregon
 B.S. 1964, University of Oregon
 John Edward Sawicki, Connecticut
 B.S. 1965, Trinity College, Conn.
 Ronald Joseph Scelfo, New Jersey
 B.S. 1965, Tufts University
 Robert Harris Schulman, New York
 B.A. 1965, Yeshiva University
 Frederic Tovi Schwartz, Massachusetts
 B.A. 1965, American International College
 William Joel Schwartz, New York
 B.A. 1965, Yeshiva University

 Thomas Gordon Sinderson, Maryland
 B.A. 1965, Emory University
 Eugene Lewis Speck, Virginia
 B.A. 1958, Brandeis University
 M.S. 1961, University of Massachusetts
 Ph.D. 1966, George Washington University
 Paul Stephan Spiegler, District of Columbia
 B.A. 1960, New York University
 H. Eric Stern, New York
 B.A. 1965, Brooklyn College
 Henry Michael Storper, New York
 B.A. 1965, New York University
 Joseph Meyer Strauch, New York
 B.A. 1965, Yeshiva University
 Swen Russel Swensen, Utah
 B.A. 1963, Brigham Young University
 M.S. 1968, George Washington University
 Luke Edward Terry, Jr., West Virginia
 B.S. 1965, College of William and Mary
 David Alan Thompson, Pennsylvania
 B.S. 1965, Elizabethtown College
 George William Tietjen, New York
 (With Distinction)
 B.A. 1965, Rutgers, the State University
 Anthony John Tortolani, New York
 B.S. 1965, Fordham University

 Charles Richard Tuegel, Virginia
 B.A. 1966, George Washington University
 Neil Joseph Weiner, New York
 B.A. 1965, University of Pennsylvania
 Edmund Anthony Panther West, New York
 B.A. 1965, New York University
 Ralph Robinson Wolf III, New York
 B.A. 1965, Yale University
 Charles Harold Wollack, Pennsylvania
 B.A. 1959, Temple University
 M.A. 1961, Ph.D. 1963, Princeton University
 Ira Gene Wong, Oregon
 B.A. 1963, University of Oregon

Internship Appointment

Medical Branch Hospitals, University of Texas, Galveston, Texas
 George Washington University Hospital, Washington, D.C.
 Brooke General Hospital, San Antonio, Texas
 Veterans Administration Hospital, Washington, D.C.
 Washington Hospital Center, Washington, D.C.
 Jackson Memorial Hospital, Miami, Fla.

 University of Iowa Hospitals, Iowa City, Iowa
 Gorgas Hospital, Balboa Heights, Canal Zone
 U.S. Public Health Service Hospital, San Francisco, Calif.
 Jackson Memorial Hospital, Miami, Fla.

 Greenwich Hospital, Greenwich, Conn.
 Maimonides Hospital, Brooklyn, N.Y.

 George Washington University Hospital, Washington, D.C.
 North Shore Hospital, Manhasset, N.Y., and Memorial Hospital for Cancer and Allied Diseases, New York, N.Y.
 D.C. General Hospital, Washington, D.C.

 New York Hospital and Memorial Hospital for Cancer and Allied Diseases, New York, N.Y.

 George Washington University Hospital, Washington, D.C.
 Maimonides Hospital, Brooklyn, N.Y.
 Hartford Hospital, Hartford, Conn.
 Maimonides Hospital, Brooklyn, N.Y.
 Latter-Day Saints Hospital, Salt Lake City, Utah

 Kansas City General Hospital, Kansas City, Mo.
 Denver General Hospital, Denver, Colo.
 Presbyterian Hospital, New York, N.Y.

 North Shore Hospital, Manhasset, N.Y., and Memorial Hospital for Cancer and Allied Diseases, New York, N.Y.
 Walter Reed Army Medical Service Hospital, Washington, D.C.
 Hartford Hospital, Hartford, Conn.

 Lenox Hill Hospital, New York, N.Y.

 Charity Hospital of Louisiana, New Orleans, La.
 Kaiser Foundation Hospital, Oakland, Calif.

 University Hospital, University of Iowa, Iowa City, Iowa

APPENDIX: RECENTLY ESTABLISHED REGULATIONS

THE FOLLOWING UNIVERSITY REGULATIONS are under review and may be subject to change in connection with the establishment of judicial processes. Bulletins and handbooks incorporating any changes will be issued as appropriate.

The following resolution, submitted by the University Senate, was approved by the University's Board of Trustees on October 19, 1968:

Whereas, safety and order are essential preconditions of the learning process, and indeed of the very concept of a university; and

Whereas, The George Washington University is committed to protection of free speech and freedom of assembly, and to safeguarding the right of lawful protest on campus; and is committed equally to maintaining the peace and safety of the campus, in the knowledge that all rights are in jeopardy when violence and civil disorder prevail over law and reason;

Now, therefore, be it resolved by the Senate of The George Washington University: that in the event a demonstration at this University exceeds the bounds of free assembly and lawful advocacy, and demonstrators are engaging in unlawful acts which cause or imminently threaten injury to persons or property, or which obstruct or interfere with normal and necessary University activities, this body affirms the authority of the President, or other University officials designated to act in his absence, to take such reasonable steps, if possible after consultation with the Chairman of the Executive Committee of the University Senate and the President of the Student Body, as are required to restore and preserve order; including, if deemed necessary and appropriate, suspension of students or faculty engaging in such acts, and use of such law enforcement personnel as are needed to effect the removal, arrest, and prosecution of law violators. Any such suspension shall be reviewed by an appropriate tribunal as soon after order is restored as is practicably possible.

The following was approved by the University's Board of Trustees on October 19, 1968:

Any student suspended from The George Washington University on the grounds of exceeding the bounds of free assembly and lawful advocacy shall have his suspension reviewed by the Hearing Committee on Student Affairs of The George Washington University as soon after order is restored as is practicably possible.

The following resolution, submitted by the Student Life Committee, was approved by the University's Board of Trustees on October 19, 1968:

Be it resolved that The George Washington University: affirms its traditional commitment to freedom of expression (a) by continuing to permit business and activities at designated places on campus, and (b) by placing no obstacle to students who may wish to protest the presence of such recruiters, provided, however, that such protest shall be orderly and shall not impede or disrupt the recruiter in his activities.

The University affirms its place as a forum for the free exchange of ideas (a) by assuring that guests invited to speak on this campus at duly scheduled meetings shall have the right to appear and to be heard, and (b) by sanctioning the freedom of students to express dissent from the views of the speaker, provided, however, that that expression of dissent be orderly and nonobstructive.

The University distinguishes between orderly protest and resistance-by-obstruction; it accepts the former as a legitimate expression of dissent while rejecting the latter as an abridgement of the freedoms of the individuals who may be its object.

The following was approved by the University's Board of Trustees on October 19, 1968:

The George Washington University is opposed to discrimination based on race, color, or creed. Such discrimination may have appeared in campus organizations in the past. In the future, however, no organization can be recognized or supported by the University unless it provides continued assurance of nondiscrimination in membership practices and in intent, considered adequate by relevant committees and officers of the University.

The following was approved by the University's Board of Trustees on October 19, 1968:

The University cannot condone violations of law, including violation of those laws which proscribe possession, use, sale, or distribution of certain drugs. Members of the academic community should know that administrative action, which may include dismissal from the residence halls, revocation of other privileges, or suspension or dismissal from the University, may be taken in order to protect the interests of the University and the rights of others.

The Board of Trustees reaffirms the responsibility of the President and the Faculty to continue to implement this policy.

The following resolution, submitted by the University Senate, was approved by the University's Board of Trustees on January 16, 1969:

Be it resolved by the Senate of The George Washington University: Any member of the University (including as members of the University all persons having a formal connection with the University)

(a) who engages in conduct that unreasonably obstructs teaching, research, and learning, or

(b) who unreasonably obstructs free access to members or guests of the University or to University buildings, or

(c) who disobeys general regulations of the University, or

(d) who damages University property or injures members or guests of the University,

may be punished for his conduct by dismissal from the University, or by some lesser disciplinary action, through procedures established within the University for the government of its members.

In order to insure due process, any student subject to dismissal or other disciplinary action on the grounds of violating any of the premises of this resolution shall have, at his discretion, the right of review of the action by the University Hearing Committee on Student Affairs.

INDEX

A

Academic dishonesty, 28
 Academic dismissal, 28
 Academic status, 85
 Accident insurance, 30
 Administration, officers of, 87
 Administrative offices, 14
 Admission procedure, 18-20
 Advanced standing, 18-19
 Affiliated hospitals, 15-17
 Alumni and allied associations, 36-37

Anatomy courses, 39-42
 Anesthesiology courses, 42-43
 Application, 18-20
 For graduation, 28
 Arts and Medicine, combined
 curriculum, 22
 Assistants in research and
 instruction, 129-36
 Attendance, 27

B

Bachelor of Arts and Doctor of
 Medicine, combined degree, 22
 Biochemistry courses, 43-45

Board of Trustees, 85-86
 Buildings, 14

C

Calendar 1970-71, 4-5
 Children's Hospital, 15
 Clinical clerkships, 12-13
 Clinical Engineering courses, 45-46
 Clinical facilities, 15-17
 Clinic, University, 15
 Colleges of the University, 85
 Columbia Hospital for Women, 15

Committees of the Executive Faculty,
 9-10
 Cost of textbooks and equipment, 21
 Courses of instruction, 39-83
 Numbers and symbols used in
 connection with, 39
 Curriculum, 13

D

Dean's Council, 8
 Degrees, 14
 Combined Bachelor of Arts and
 Doctor of Medicine, 22
 Combined Master of Science and
 Doctor of Medicine, 22-23
 Doctor of Medicine, 17-22
 Recipients of, 146-48
 Departments of instruction, 39-83

Dermatology courses, 46
 Dishonesty, academic, 28
 Dismissal from the University, 28, 29,
 149-50
 Distinction, degrees earned with, 22
 District of Columbia General Hospital,
 15
 Divisions of the University, 85
 Doctor of Medicine, degree of, 17-22

E

Emeritus Professors, 88
 Entrance requirements, 17-18
 Epidemiology and Environmental Health
 courses, 47-48

Equipment, 14
 Equipment, student, cost of, 21
 Examinations, 18, 19, 28
 Executive faculty, 8-10

F

Facilities, 14-17
 Faculty, 7-8
 And staff of instruction, 88-129
 Fairfax Hospital, 15-16
 Fees, 20, 21

Fellowship programs, 35
 Fellowships, 23, 35
 Financial aid, 21-22, 23-26
 Financial regulations, 21

G

- General Alumni Association, 36-37
- Geographical distribution of students, 144
- Government museums, 17
- Grades, 27
- Graduates, 1969, 146-48
- Graduation, 28
- Fee, 20
- With distinction, 22
- Gynecology courses, 59-62

H

- Health and accident insurance, 30
- Health services, 29-31
- History of the School, 10-11
- History of the University, 84-85
- Honor societies, 31
- Honorary Trustees, 86
- Honors, 22
- Hospital, 15, 32-36
- Administrative staff, 33
- Medical staff, 32-33
- Housing, 31

I

- Insurance, health and accident, 30
- Institutions in which School of Medicine students earned degrees, 144-45
- Internship appointments, 1969 graduates, 146-48
- Internship program, 34

L

- Library, 14
- Loan funds, 21-22, 25-26
- Location of the University, 84-85

M

- Master of Science and Doctor of Medicine combined degree, 22-23
- Medical Admission Test, 18
- Medical Alumni Association, 37
- Medical and Public Affairs courses, 48-49
- Medical Center, 11
- Medical Library, 14
- Medical School buildings, 14
- Medical Technology course, 35-36
- Medicine courses, 49-55
- Microbiology courses, 55-57

N

- National Board Examinations, 19, 28
- Neurological Surgery courses, 58
- Neurology courses, 58-59

O

- Objectives of the School of Medicine, 11
- Obstetrics courses, 59-62
- Ophthalmology courses, 62-63
- Orthopaedic Surgery courses, 63
- Otolaryngology courses, 63-64

P

- Pathology courses, 64-68
- Patient care, 12-13
- Payment of fees, 21
- Pediatrics courses, 68-71
- Pharmacology courses, 71-73
- Physical examinations, 30-31
- Physical Medicine courses, 73-74
- Physiology courses, 74-77
- Plan of instruction, 11-13
- Prizes, 26-27
- Probation, 28
- Projected tuition increases, 21
- Psychiatry courses, 77-79

Q

- Quality-point index, 28

R

Radiology courses, 79-80
 Recipients of degrees, 1969, 146-48
 Recreation, 32
 Registration, 20
 Summaries of, 143-45
 Regulations, 27-29, 149-50
 Financial, 21
 Health services, 30
 Rehabilitation courses, 73-74

Release of student information, policy on, 29
 Research, assistants in, 129-36
 Research building, 14
 Residence halls, 31
 Residency programs, 34-35
 Right to change rules, 29
 Right to dismiss students, 29

S

St. Elizabeths Hospital, 16
 Scholarships, 23-25
 Schools of the University, 85
 Selection procedures, 19-20
 Staff of instruction, 88-129
 Staff of the University Hospital, 32-33
 Standing of the School, 85

Student equipment, cost of, 21
 Student information, release of, 29
 Students registered, 1969-70, 137-43
 Summaries of Registration, 143-45
 Surgery courses, 80-82
 Suspension, 28, 149-50

T

Teaching aids, 14
 Textbooks, cost of, 21
 Trustees, Board of, 85-86

Tuition:
 Fee, 20
 Projected increases, 21

U

University, academic status, 85
 University Center, 31
 Fee, 20
 University Clinic, 15

University, history of, 84-85
 University, location of, 84-85
 Urology courses, 82-83

V

Veterans Administration Hospital, 17

W

Washington Hospital Center, 17

ANNUAL ISSUES OF THE UNIVERSITY BULLETIN

Requests for the following publications must include your zip code and should be addressed as indicated.

COLLEGE OF GENERAL STUDIES, Dean of the College

NATIONAL LAW CENTER, Dean of the Center

SCHOOL OF ENGINEERING AND APPLIED SCIENCE, Dean of the School

UNDERGRADUATE AND GRADUATE CATALOGUE (Arts and Sciences, Education, Government and Business Administration, Public and International Affairs), Office of Admissions

SCHOOL OF MEDICINE, Admissions Office, School of Medicine

SUMMER SESSIONS, Dean of the Summer Sessions

SCHEDULE OF CLASSES: FALL AND SPRING SEMESTERS, Registrar

SCHEDULE OF CLASSES: SUMMER SESSIONS, Dean of the Summer Sessions

COLLEGES AND SCHOOLS—DEGREE PROGRAMS

COLUMBIAN COLLEGE OF ARTS AND SCIENCES: Associate in Arts (A.A.), Bachelor of Arts (B.A.), Bachelor of General Studies (B.Gen.Std.), Bachelor of Science (B.S.), Bachelor of Science in Environmental Health (B.S. in Env.Health), Bachelor of Science in Geodetic and Cartographic Science (B.S. in Geod. and Cart.Sc.), Bachelor of Science in Medical Technology (B.S. in Med.Tech.), and Bachelor of Science in Oceanography (B.S. in Ocea.)

GRADUATE SCHOOL OF ARTS AND SCIENCES: Master of Arts (M.A.), Master of Fine Arts (M.F.A.), Master of Music (Mus.M), Master of Science (M.S.), Master of Science in Forensic Science (M.S. in Forens.S.), and Doctor of Philosophy (Ph.D.)

SCHOOL OF MEDICINE: Doctor of Medicine (M.D.)

NATIONAL LAW CENTER: Juris Doctor (J.D.), Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), Master of Comparative Law (American Practice) (M.Comp.L.(Am.Prac.)), and Doctor of Juridical Science (S.J.D.)

SCHOOL OF ENGINEERING AND APPLIED SCIENCE: Bachelor of Science (Civil Engineering) (B.S. (C.E.)), Bachelor of Science (Electrical Engineering) (B.S. (E.E.)), Bachelor of Science (Measurement Science) (B.S. (Meas.S.)), Bachelor of Science (Mechanical Engineering) (B.S. (M.E.)), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

SCHOOL OF EDUCATION: Bachelor of Arts in Education (B.A. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Teaching (M.A.T.), Master of Arts in Education (M.A. in Ed.), Education Specialist (Ed.S.), and Doctor of Education (Ed.D.)

SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION: Bachelor of Business Administration (B.B.A.), Bachelor of Science in General Studies (B.S. in Gen.Std.), Master of Arts in Government (M.A. in Govt.), Master of Arts in Health Care Administration (M.A. in H.C.A.), Master of Business Administration (M.B.A.), Master of Public Administration (M.P.A.), Master of Science in Administration (M.S. in Adm.), Master of Science in Business Administration (M.S. in B.A.), Master of Urban and Regional Planning (M. of Urb. and Reg.Plan.), Graduate Certificate in Health Care Administration (Grad.Cert. in H.C.A.), Doctor of Business Administration (D.B.A.), and Doctor of Public Administration (D.P.A.)

SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS: Bachelor of Arts (B.A.), Certificate of the Institute for Sino-Soviet Studies (Cert. of I.S.S.S.), Master of Arts (M.A.), and Master of Science in International Affairs (M.S. in I.A.)

THE GEORGE WASHINGTON UNIVERSITY

COLLEGE OF LIBERAL ARTS, 1889-1907

THE GRADUATE SCHOOL OF ARTS AND SCIENCES, 1907

THE SCHOOL OF ENGINEERING, 1907

THE SCHOOL OF LAW, 1907

THE SCHOOL OF EDUCATION, 1907

THE SCHOOL OF EDUCATION, 1907

THE SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION, 1907

THE SCHOOL OF PUBLIC AFFAIRS, 1928

THE COLLEGE OF MEDICAL DENTISTRY, 1907

THE DEPARTMENT OF LAW, 1907

THE UNIVERSITY HOSPITAL, 1907

THE UNIVERSITY HOSPITAL, 1907

THE GEORGE WASHINGTON UNIVERSITY BULLETIN



NATIONAL
LAW
CENTER

1969-1970

CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Office of Admissions. Mailing address for all University offices unless otherwise indicated is The George Washington University, Washington, D.C. 20006.

Information concerning courses of instruction, programs, and faculties of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on page 128. Zip code is essential for mailing catalogues.

Admission

Graduate

Arts and Sciences.....Dean of The Graduate School of Arts and Sciences
Education.....Dean of The School of Education
Engineering and Applied Science.....Dean of The School of Engineering
and Applied Science

Accounting, Business Administration, Business and Economic Statistics, Health Care Administration, International Business, Personnel Administration, Public Administration, Urban and Regional Planning
Dean of The School of Government and Business Administration
International Affairs and Public Affairs.....Dean of
The School of Public and International Affairs

Law.....Dean of The National Law Center
School of Medicine.....1331 H Street, Washington, D.C. 20005

Undergraduate.....Office of Admissions

Alumni Association.....Alumni Office

Medical Alumni Association.....1331 H Street, Washington, D.C. 20005

Financial Aid.....Student Financial Aid Office

Law Students.....Dean of The National Law Center

Foreign Students.....Adviser to International Students

Gifts and Bequests.....Resources Program

Housing.....Housing Administrator

Off-campus and Noncredit Courses.....Dean of The College of General Studies

Student Employment.....Student and Alumni Career Services Office

Placement, Law Students.....Dean of The National Law Center

Summer Sessions.....Dean of The Summer Sessions

Transcripts of Records.....Registrar

Veterans Education.....Registrar

THE GEORGE WASHINGTON UNIVERSITY BULLETIN
Volume LXVIII, Number 11, May, 1969

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MONTHLY: SEPTEMBER, OCTOBER, NOVEMBER, MARCH, MAY
(2 ISSUES IN DECEMBER; 4 ISSUES IN APRIL)

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THE GEORGE WASHINGTON UNIVERSITY BULLETIN

THE NATIONAL LAW CENTER
1969-70

WASHINGTON, D.C. 20054



CONTENTS

| Page | |
|------|--|
| 5 | Calendar |
| 7 | The National Law Center |
| 10 | Juris Doctor Program |
| 15 | Master's and Doctoral Programs |
| 18 | Degree Programs for Foreign Students |
| 20 | Unclassified Students |
| 21 | Continuing Legal Education |
| 23 | General Information |
| 24 | Admission |
| 25 | Registration |
| 27 | Fees and Financial Regulations |
| 31 | Financial Aid |
| 33 | Prizes |
| 35 | Regulations |
| 40 | University Computer Center |
| 41 | Student Services |
| 45 | Courses of Instruction |
| 45 | Courses for Juris Doctor Candidates |
| 53 | Advanced Courses |
| 71 | Special Programs in Research and Instruction |
| 73 | The George Washington Law Association |
| 77 | The University |
| 78 | Board of Trustees |
| 80 | Officers of Administration |
| 81 | Faculty and Staff of Instruction |
| 86 | The National Law Center Record 1968-69 |
| 86 | Degrees Conferred |
| 94 | Students Registered, Spring Semester 1969 |
| 119 | Institutions in which Law Center Students Earned Degrees |
| 122 | Summary of Registration, Fall Semester 1968-69 |
| 123 | Appendix: Recently Established Regulations |
| 125 | Index |
| 128 | Annual Issues of the University Bulletin |

1969

JULY

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AUGUST

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1970

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NOVEMBER

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THE CALENDAR 1969-70

1969 SUMMER TERM

- June 9 Registration for all sessions (11 am-7 pm) *Monday*
 June 10 First- and 13-week sessions begin *Tuesday*
 July 4 Independence Day (holiday) *Friday*
 July 18 First-session classes end *Friday*
 *July 21-23 First-session examination period *Monday-Wednesday*
 July 24 Registration for students attending 2d session only (11 am-7 pm) *Thursday*
 July 25 Second-session classes begin *Friday*
 September 1 Labor Day (holiday) *Monday*
 September 3 Last day of classes *Wednesday*
 September 4-6 Second-session and 13-week session examination period *Thursday-Saturday*

1969-70 FALL SEMESTER

- †September 15-16 Registration: *Monday-Tuesday*
 Application for February graduation due as part of registration
 Classes begin *Wednesday*
 September 22 No classes *Monday*
 October 10 S.J.D. dissertations of February candidates due *Friday*
 November 11 Veterans Day (holiday) *Tuesday*
 November 26 Thanksgiving recess begins after last class *Wednesday*
 December 1 Classes resume *Monday*
 December 20 Christmas recess begins after last class *Saturday*
 January 5 Classes resume *Monday*
 January 5 LL.M. theses of February candidates due *Monday*
 January 9 Last day of fall-semester classes *Friday*
 January 12-13 Reading period *Monday-Tuesday*
 January 14-23 Examination period *Wednesday-Friday*

1970 SPRING SEMESTER

- †January 29-31 Registration: *Thursday-Saturday*
 Application for June graduation due as part of registration
 Spring semester classes begin *Monday*
 February 2 S.J.D. dissertations of June candidates due *Friday*
 February 6 Winter Convocation *Saturday*
 February 23 Holiday *Monday*
 March 15 Application for 1970-71 teaching fellowships postmarked by *Sunday*
 March 21 Spring recess begins after last class *Saturday*
 March 31 Classes resume *Tuesday*
 May 4 LL.M. theses of June candidates due *Monday*
 May 14 Last day of spring semester classes *Thursday*
 May 15-18 Reading period *Friday-Monday*
 May 19-28 Examination period *Tuesday-Thursday*
 May 29-30 Holiday *Friday-Saturday*
 June 7 Commencement *Sunday*

1970-71 FALL SEMESTER

- September 14-15 Registration: *Monday-Tuesday*

†Classes scheduled Monday, Tuesday and Wednesday evenings for the 13-week session will meet on
 Jan. 21, 22, and 23.
 *Hours of instruction will be announced in the *Schedule of Classes*, which will be available well in
 advance of each semester.



THE NATIONAL LAW CENTER

HISTORY

THE LAW SCHOOL, the oldest in the District of Columbia, was established in 1865 with a formal program of two years of study. This was largely through the efforts of the Reverend George Whitefield Samson, President of Columbian College, whose action resulted in the purchase of a separate building for holding law classes. This building had belonged to Trinity Church, of which Francis Scott Key had been Senior Warden. It was occupied by the Law School until 1884.

Sixty graduates, from twenty-two of the then thirty-seven states, received degrees in 1867. The School continued to have a student body and a faculty which reflected the fact that it was at the seat of our nation's government. Associate Justices David J. Brewer and John Marshall Harlan of the Supreme Court of the United States were among the prominent members of the bench and bar who served as lecturers.

In 1877, one year after the first such program was adopted in the United States, the Law School instituted a course leading to the degree of Master of Laws. In 1898, the course of instruction for the degree of Bachelor of Laws was extended to three years. The School took part in 1900 in the organization of the Association of American Law Schools. Later, women students were admitted, and in 1916 the first woman to take a regular course in law was graduated.

In the past quarter-century the Law School developed its course and seminar offerings with consideration for the needs of first-degree and graduate students. The degree of Doctor of Juridical Science was instituted in 1940. The needs of foreign lawyers who come to this country and who require additional preparation for law work in the United States resulted in the creation of programs for the degrees of Master of Comparative Law in 1946 and Master of Comparative Law (American Practice) in 1951.

National University, which had had an important place in legal education in the District of Columbia since 1869, was merged in George Washington University in August, 1954.

Programs of special research and study, such as the independent Patent, Trademark, and Copyright Research Institute, give richness to the basic curriculum.

The National Law Center, which was established in 1959, seeks to establish and coordinate programs of teaching, research, and creative development in law which will assist the profession to meet the demands placed upon it by contemporary society. Emphasizing an interdisciplinary approach to modern social, political, scientific, and economic problems having legal implications, the Center also encourages close relations with other appropriate units of the University.

In 1967, the Law Center opened its new five-story library building, adjoining the remodeled classroom and office building, Stockton Hall.

In 1968, the Law Center established the degree of Juris Doctor as its first degree in law.

LOCATION IN THE NATION'S CAPITAL

Of special significance is the location of the National Law Center in the Nation's Capital, the focal point of the law in action, both American and international. The work of the Center goes on in this environment, presenting a unique opportunity for observation and study of federal agencies—judicial, legislative, and administrative. Readily accessible are the Supreme Court of the United States, the federal trial and appellate courts of the District of Columbia, and, in addition, federal courts of special jurisdiction, such as the United States Court of Claims, the United States Court of Customs and Patent Appeals, the Tax Court of the United States, and the Court of Military Appeals. Current federal legislation can be studied as it is considered by Congressional committees and as it comes up for debate on the floors of the House of Representatives and the Senate. With respect to the federal administrative agencies, students here in Washington have matchless opportunities for study and observation. They can attend informal and formal hearings of these agencies and can obtain from the docket sections complete records of administrative adjudication in specific cases. Illustrative of such federal agencies are the Interstate Commerce Commission and the Civil Aeronautics Board in the field of transportation; the Federal Trade Commission in the field of trade regulation; the Securities and Exchange Commission in the field of security issues and corporate finance; the National Labor Relations Board in the field of labor-management relations; the United States Patent Office in the field of patent law; the Federal Power Commission in the field of water, natural gas, and electric power; and the Federal Communications Commission in the field of radio and television.

Supplementing these environmental advantages of law in action are the exceptional research library collections in the Library of Congress, in the various departments of the Federal Government, and in the libraries of the headquarters of national and international organizations. The notable library of the Carnegie Foundation for International Peace has been acquired by George Washington University for use of research students in international and comparative law, fields with respect to which Washington has come to be called "The Capital of the World."

The years of residence at law school are years of participation in the life of the community, which in the case of the George Washington University National Law Center is the government of the United States. As a consequence, the study of law takes on added meaning, whether the goal be government service or practice, general or specialized, and whatever the community in which the student plans to practice.

OBJECTIVES

The primary purpose of the Center is to prepare men and women to meet the needs of society in the many fields of law, public and private. These needs call not only for technical skill but also for responsible leadership in the development of the law and the administration of justice. In fulfilling these responsibilities the Center conducts (1) a program of study in preparation for the practice of law, whether it be general practice, specialized practice, or government service; (2) the publication of a law journal containing the results of research in public law; (3) a series of student professional cocurricular activities; (4) study and research on an advanced level for foreign as well as for American students; and (5) a continuing legal education program for members of the bar.



Juris Doctor Program

THE WIDE GEOGRAPHIC DISTRIBUTION of the students who come to the Nation's Capital to study law makes this a truly national law school. Students from almost every state in the Union here join students from several foreign countries in their legal training. Last year over 340 colleges and universities were represented. The basic curriculum leading to the Juris Doctor degree is addressed to the development and application of legal principles, skills, and ideals which are indispensable to the equipment of a lawyer for professional responsibility and leadership in modern society. It includes, first and foremost, the traditional core of legal education, namely, the study of legal materials—judicial, statutory, and administrative—and instruction in the understanding and technique of their use. It also includes the study of the nature and purpose of law, the history of the Anglo-American legal system, and the history and standards of the legal profession; practice in the skills of legal research and legal writing; elementary training in trial and appellate practice; and, through the medium of seminars, experience in group handling of legal problems.

ENTERING CLASSES

The curriculum is organized so that students may begin the study of law for the Juris Doctor degree only at the start of the fall semester. Transfer students may enter at the start of the spring semester also.

ENTRANCE REQUIREMENTS

Admission to candidacy for the degree of Juris Doctor requires a Bachelor of Arts or equivalent degree from an accredited college or university, a satisfactory quality of work, and an acceptable distribution of courses. Eligibility is based on personal and scholastic records and on the result of the Law School Admission Test. No applicant will be acceptable in transfer who is ineligible to return in good standing to a previously attended law school. From the applicants, a selection is made by the Committee on Admissions.

Information concerning the Law School Admission Test may be obtained from the Dean of the National Law Center or from the Educational Testing Service, 20 Nassau Street, Princeton, N. J. 08540; or 1947 Center Street, Berkeley, Calif. 94704. The test is administered at various centers in the United States in February, April, July, and November each year. Completed application blanks and fees must be received by the Educational Testing Service at least two weeks before the date of the test. It is not necessary that formal application for admission be made prior to taking the test.

ADVANCED STANDING

Advanced standing toward the degree of Juris Doctor may be granted for work successfully completed in other law schools which are members of the Association of American Law Schools or are approved by the American Bar Association. Transferred credits will not be recognized in excess of those which might be earned in a similar period in the National Law Center.

Advanced standing will not be granted for law work already counted toward the Bachelor of Arts or other pre-legal degree.

TUITION DEPOSIT

Every student admitted to the National Law Center as a candidate for the degree of Juris Doctor must submit a \$100 tuition deposit after receipt of notification of acceptance. This deposit is credited toward tuition and is refundable in full only in cases of applicants called into military service; \$50 will be refunded if notification is received by July 1 that the student does not intend to enter in the fall, \$20 will be refunded if notification is received by September 1.

Students admitted before April 1 must submit the deposit by May 1; those admitted after April 1, within three weeks of notification of acceptance.

REQUIREMENTS FOR THE DEGREE

The student must have completed a residence period of three academic years (four years for evening students) and 84 semester hours of required and elective courses, with a cumulative average of at least 65. At least one academic year of residence and 28 semester hours are required of students admitted with advanced standing. The work of the final semester or summer session must be completed while in residence at the National Law Center. Credits allowed by way of advanced standing are not included in computing the average required for graduation.

Graduation Requirements.—See page 38 for a statement of the graduation requirements.

HONORS

The degree of Juris Doctor "With Honors" is awarded students who obtain a minimum cumulative average of 75 but less than 85, the degree of Juris Doctor "With Highest Honors" is awarded students who obtain a minimum cumulative average of 85.

RESIDENCE

Candidates for the Juris Doctor degree must complete a residence period of three academic years. Attendance in the day division for the fall and spring semesters constitutes residence for an academic year; similar attendance in the evening division constitutes residence for three-fourths of an academic year. Consequently, a day student must attend 6 semesters to meet residence requirements; an evening student must attend 8. Students authorized to take schedules of less than 10 hours in the day division or less than 6 hours in the evening division receive residence credit on a proportional basis. Students who attend the summer sessions receive fractional residence credit.

CURRICULUM

Required and Elective Courses.—A program of required and elective courses has been developed to assure coverage of the basic courses and allow a degree of flexibility to meet the diverse interests of students. At the present time, the first-year courses and one additional course are required, leaving a total of 52 hours of electives. It is important that students plan ahead regarding their electives.

Legal Writing.—Two semester hours of credit in legal writing are required after the first year for the Juris Doctor degree. This requirement may be met by service on the *Law Review* or by the satisfactory completion of a seminar which requires a research paper, Law 344 *Legal Writing*, or Law 598 *Research in Public Law*.

Trial Practice Court.—Classroom instruction is conducted in pleading and procedure, trial and appellate practice, and evidence. This instruction includes grounding in the principles of the Federal Rules of Civil Procedure and the Federal Rules of Criminal Procedure. Students participating in the work of the Trial Practice Court serve as junior counsel and as senior counsel in the trying of cases. A special section of the court is devoted exclusively to the trial of patent cases. Experience in preparing and arguing appellate court cases is available through the course in Appellate Practice and Procedure and through the Case Club Competition.

Patent Law.—The following courses are particularly suggested for students interested in patent law: Unfair Trade Practices, Patent Law, Patent Office Practice, Patent Trial and Appellate Practice, Court Review of Patent Office Decisions, and Federal Antitrust Laws. Additional courses recommended are Advanced Topics in Patent Law and Trade Regulation Seminar.

Day Division

FIRST YEAR

| FALL SEMESTER | | SPRING SEMESTER | |
|----------------------------------|----|----------------------------|----|
| Contracts I | 4 | Contracts II | 4 |
| Torts | 4 | Property I | 4 |
| Criminal Law and Procedure | 4 | Constitutional Law | 4 |
| Legal Research and Writing | 2 | Civil Procedure | 14 |
| Total semester hours | 14 | Total semester hours | 14 |

SECOND YEAR

| FALL SEMESTER | | SPRING SEMESTER | |
|----------------------------|----|----------------------------|----|
| Elective | 14 | Evidence | 10 |
| | | Elective | 14 |
| Total semester hours | 14 | Total semester hours | 14 |

THIRD YEAR

| FALL SEMESTER | | SPRING SEMESTER | |
|--|----|----------------------------|----|
| Elective | 12 | Elective | 14 |
| Legal writing requirement (see above) | 2 | | 14 |
| Total semester hours | 14 | Total semester hours | 14 |

Evening Division

FIRST YEAR

FALL SEMESTER

| | |
|-----------------------------------|-----------|
| Contracts I | 4 |
| Torts | 4 |
| Legal Research and Writing | 2 |
| Total semester hours | 10 |

SPRING SEMESTER

| | |
|-----------------------------------|-----------|
| Contracts II | 2 |
| Criminal Law and Procedure | 4 |
| Civil Procedure | 4 |
| Total semester hours | 10 |

SECOND YEAR

FALL SEMESTER

| | |
|-----------------------------------|-----------|
| Property I | 4 |
| Elective | 6 |
| Total semester hours | 10 |

SPRING SEMESTER

| | |
|-----------------------------------|-----------|
| Constitutional Law | 4 |
| Elective | 6 |
| Total semester hours | 10 |

THIRD YEAR

FALL SEMESTER

| | |
|--|-----------|
| Elective | 8 |
| Legal writing requirement (see page 12) | 2 |
| Total semester hours | 10 |

SPRING SEMESTER

| | |
|-----------------------------------|-----------|
| Evidence | 4 |
| Elective | 6 |
| Total semester hours | 10 |

FOURTH YEAR

FALL SEMESTER

| | |
|-----------------------------------|-----------|
| Elective | 10 |
| Total semester hours | 10 |

SPRING SEMESTER

| | |
|-----------------------------------|-----------|
| Elective | 10 |
| Total semester hours | 10 |

SUMMER TERM OR NINTH SEMESTER

| | |
|----------------|---|
| Elective | 4 |
|----------------|---|

THE LAW REVIEW

The *George Washington Law Review*, edited and managed by students of the National Law Center, is devoted exclusively to state and federal public law. The location of the University in the National Capital, where the primary sources of federal public law may be observed in operation, affords an unparalleled opportunity for specialization in this field.

The staff participates in a two-year *Law Review* program. The editorial staff is selected from among those students who have successfully completed the

first year of *Review* work. Students receive four hours of academic credit for the two-year program.

THE JOURNAL OF LAW AND ECONOMIC DEVELOPMENT

The Journal of Law and Economic Development is a biannual publication of the Law Center, presenting articles and commentary on public and private international financial development, comparative law, and international law. In conjunction with a faculty adviser, it is managed and edited by a student board of editors. Third-year students serving on the board of editors may earn one or two semester hours of credit by registering for Law 346 *Credit Activities*.

THE STUDENT BAR ASSOCIATION

Every student in the Juris Doctor program is a member of the Student Bar Association, which is organized to enable students to become better acquainted with problems of the profession, to foster professional ideals, and to bring about closer contact with members of the profession engaged in active practice of the law. The work of the Student Bar Association is carried on by various committees and by group and general meetings of a professional and social nature. From time to time lectures are given by outstanding authorities on legal and professional problems.

An important activity is the Van Vleck Case Club Competition, which provides an opportunity for training in appellate advocacy. First- and second-year students participate as contestants before courts composed of members of the Faculty and the local bar. Senior law students of the Case Club also sit as



judges. The final argument is held before a court composed of distinguished federal judges.

The Legal Aid Program is under the joint sponsorship of the George Washington University Student Bar Association and the Junior Bar Section of the District of Columbia Bar Association. Participating students assist court-appointed attorneys in the preparation of cases for trial or appeal. Qualified second- and third-year students are eligible for participation in the program.

The International Law Society is another activity supported by the Student Bar Association. The Society offers a forum for speakers in this field and provides a way in which its members can participate in international legal activities in Washington.

In the ranking of member associations by the American Law Student Association, the George Washington University Student Bar Association has received first place twice and second place twice in past years.

ORDER OF THE COIF

The Order of the Coif, a national honor society with chapters in over forty law schools, aims "to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship." The George Washington University Chapter was established in 1926. Members are elected each year from the highest-ranking 10 per cent of the graduating Juris Doctor candidates.

Master's and Doctoral Programs

THE ADMINISTRATION OF JUSTICE under law is a matter so vast and complex that some who hold the Bachelor of Laws or Juris Doctor degree feel the need for further study. The Master's and doctoral programs give students the opportunity to broaden and deepen their understanding of the law.

The Master of Laws candidate may follow a program of general study or concentrate in one of the specialized areas listed below. Courses in each of these areas are included in the 401-600 series. Graduates who complete their work in the areas designated with an asterisk (*) may have the field of specialization noted on their diplomas.

*Administrative Law: Economic Regulation

Corporation Law

*Government Procurement Law

*Labor Law

Law and Poverty

Law, Psychiatry, and Criminology

*Law, Science, and Technology

Natural Resources Law

*Patent and Trade Regulation Law

*Public International and Comparative Law

Taxation

Urban Legal Studies

Programs leading to the degree of Doctor of Juridical Science offer the advanced student the opportunity to concentrate on research and writing in a specific area of interest to the legal profession.

MASTER OF LAWS**ENTRANCE REQUIREMENTS**

A Bachelor's degree from an accredited college or university* and a Bachelor of Laws, Juris Doctor, or equivalent degree from a law school which is a member of the Association of American Law Schools or is approved by the American Bar Association are required. The applicant must demonstrate (by a B average or equivalent performance measure, high class standing, *Law Review* experience, positions held, or professional achievements) that he is capable of Master's level work. Advanced standing is not granted for credits earned while a candidate for the first degree in law.

DEGREE REQUIREMENTS

The student must complete a residence period of not less than two semesters, which should be continuous. All requirements for the degree must be completed in this Law Center and in a period not exceeding three years from the time of registration for the degree. The student must complete 24 semester hours of courses as approved by his adviser and the Dean, including Law 599-600, *Thesis*. A minimum average of 75 is required.

Candidates for the degree in a selected field of specialization must complete a minimum of 12 of the required 24 semester hours in courses of the selected field. Each Master of Laws program of study should include a substantial number of 401-600 series courses.

MASTER'S THESIS

Each candidate for the degree of Master of Laws is expected to write a Master's thesis (Law 599-600) under the supervision of a member of the faculty of the National Law Center. Four hours of credit will be granted for successful completion of the thesis. The purpose of this requirement is to demonstrate the ability of the student to perform research in a special area of the law and to produce a scholarly paper containing the results of this research. The thesis is expected to be of substantially the same quality as a *Law Review* article. The requirement for a Master's thesis may be waived in appropriate circumstances.

The thesis in its final form must be presented to the Dean no later than the date specified in the Calendar. Two complete copies are required. It is the responsibility of the candidate to obtain from the Office of the Dean a printed copy of the regulations governing the styling and reproduction of theses. The mandatory thesis binding fee of \$10 must be paid at the time of registration for the last semester's work.

Accepted theses become the property of the University and are deposited in the Law Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material must be secured from the Dean.

GRADUATE COURSES IN OTHER DEPARTMENTS

The Master of Laws candidate is encouraged to take graduate courses related to his field of interest in other departments of this University. A maximum of

* The Dean is authorized to make exceptions in appropriate cases.

6 semester hours will be credited toward the degree for such courses; however, credit will be granted only if the courses are given on campus. Courses numbered 101-200 may be taken for graduate credit only if the student receives the approval of the instructor at the time of registration and does additional work, as prescribed by the department offering the course.

CONSORTIUM OF UNIVERSITIES OF THE WASHINGTON METROPOLITAN AREA, INC.

A candidate for the Master of Laws degree may take graduate courses at Georgetown University Law Center through the Consortium of Universities of the Washington Metropolitan Area, Inc. A maximum of 6 semester hours of such courses will be credited toward the degree. Permission to take Consortium courses must be granted by the Dean and the Registrar.

DOCTOR OF JURIDICAL SCIENCE

ENTRANCE REQUIREMENTS

A Bachelor of Arts or equivalent degree from an approved college or university*; a Bachelor of Laws, Juris Doctor, or equivalent degree, earned with high rank, from a law school which is a member of the Association of American Law Schools or is approved by the American Bar Association; outstanding capacity for scholarly work in the field of law; and faculty approval of the applicant's dissertation topic. The applicant must submit an outline of his proposed topic in some detail, indicating by chapter and division within chapter the exact scope of the project. There should be a bibliography for each chapter listing books, reports, cases, and *Law Review* articles to be considered. Although the outline cannot predict every detail of the subsequent research, it must be sufficiently definite to afford the faculty a basis for evaluation.

DEGREE REQUIREMENTS

The candidate must complete (1) a residence period of not less than one academic year, (2) a course of study and research—designated by his consultative committee and approved by the faculty—of no less than 8 semester hours including *Jurisprudence*, unless previously taken, and two seminars in which research papers are required, and (3) an acceptable dissertation. The dissertation must be submitted no later than three years from the date of approval of the dissertation subject. The applicant who proposes to write on a comparative law topic must have a reading knowledge of the language in which the relevant materials are to be found. At the conclusion of his first year of residence, or at such other time as the faculty may set, the candidate must pass an oral examination in those fields of study selected by the consultative committee. This examination is conducted by the consultative committee and such other members of the faculty and qualified experts as are selected by the faculty.

No later than the date specified in the Calendar, the candidate must submit to the Dean three complete copies of the dissertation and two original copies of an abstract (not to exceed 600 words) of his dissertation. One copy of the

*The Dean is authorized to make exceptions in appropriate cases.

abstract is for inclusion in the *Abstracts of Doctoral Dissertations* issue of the University Bulletin; the other is sent to University Microfilms, Inc., for inclusion in their monthly publication, *Dissertation Abstracts*, which is distributed nationally.

Printed copies of detailed regulations regarding the form and reproduction of the dissertation, preparation of the abstract, and services offered by University Microfilms, Inc., are available in the Office of the Dean. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the abstract of his dissertation, and for the basic service rendered by University Microfilms, Inc. To be acceptable the dissertation must, in the opinion of the examining committee, constitute a substantial contribution to the field of law concerned and be suitable for publication. Additional information will be supplied by the Dean. Accepted dissertations, with accompanying drawings, become the property of the University and are deposited in the Law Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the Dean.

Degree Programs for Foreign Students

THE NATIONAL LAW CENTER has several programs of study available to students trained in law outside the United States. These programs fall into two general categories: (1) those directed toward preparing the student for a bar examination in an American jurisdiction and (2) those that enable the student to return to his country with a more thorough understanding of some aspect of American law.

A student with a degree from a foreign law school is normally admitted to the Center as a Provisional Student, so that the faculty can evaluate his work before admitting him to degree candidacy. Appropriate credit will be granted for work taken as a Provisional Student.

In order to qualify for admission to the bar of an American jurisdiction, the student may apply for either the Juris Doctor (J.D.) or the Master of Comparative Law (American Practice) (M.Comp.L. (Am.Prac.)) degrees. The J.D. degree requires 84 semester hours of work in law school (credit is given for work in a foreign law school only in exceptional circumstances) and will qualify the student to take most U.S. bar examinations. The M.Comp.L. (Am.Prac.) degree requires 28 semester hours of work and satisfies the requirements of the District of Columbia Bar. The student is cautioned to ascertain the requirements of the bar for which he intends to qualify prior to selection of his law school program.

A student planning to return to his country may undertake a program leading to the degree of Master of Comparative Law (M.Comp.L.); or, if he has outstanding qualifications, he may undertake advanced work leading to the Master of Laws (LL.M.) or Doctor of Juridical Science (S.J.D.) degree. The M.Comp.L. degree programs enable the student to gain a broader comprehension of the American legal system by taking basic courses in the Law Center. The LL.M. and S.J.D. programs allow the student to work in advanced or specialized legal fields.

ADMISSION PROCEDURE

For general Admission information concerning all National Law Center students see pages 24-25.

Application, required records, and scores on the *Test of English as a Foreign Language* (see details below) must be received from *foreign applicants* no later than March 1 for the fall semester and November 1 for the spring semester.

REQUIRED RECORDS

Applicants must request all educational institutions attended to send directly to the Dean official credentials listing subjects studied, grades received, examinations taken, and degrees received. Certified copies of diplomas and certificates from secondary schools and all colleges and universities attended are required. Records of state examinations and certificates are also needed. All records become the property of the University and *cannot* be returned.

LANGUAGE TEST

Students whose native tongue is not English are required to take the *Test of English as a Foreign Language*. Students are responsible for making arrangements for taking the test and should address inquiries to TOEFL, Educational Testing Service, Princeton, New Jersey 08540, U.S.A. The completed application form should be returned to the Testing Service at Princeton well in advance of the beginning of the semester for which the applicant seeks admission. A \$10 test fee, which should be remitted with the application, entitles the student to have his test score sent to three different institutions. Registration for the *Test of English as a Foreign Language* does *not* constitute application for admission to George Washington University.

The Bulletin of Information, obtainable without charge, contains a description of the test as well as rules regarding application, fees, reports, and the conduct of the test; lists of examination centers, examination dates; and an application blank. On the application for the test, the student should specify that the scores be sent to the Dean's Office.

ENTRANCE REQUIREMENTS

For the Degree of Juris Doctor—Entrance requirements for foreign students are the same as those stated on pages 10-11, except that advanced standing is rarely granted for study in foreign law schools.

For the Degrees of Master of Comparative Law and Master of Comparative Law (American Practice).—The successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycee, or liceo, and graduation in law from a recognized foreign university.

For the Degree of Master of Laws.—Successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycee, or liceo, and graduation in law from a recognized foreign university. The applicant must demonstrate (by good academic record or equivalent performance measure, high class standing, positions held, or professional achievements) that he is capable of Master's level work and

must demonstrate a sufficient background in the Common Law to undertake the Master's program.

For the Degree of Doctor of Juridical Science.—Successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycee, or liceo; graduation in law from a recognized foreign university, outstanding capacity for scholarly work in the field of law, and faculty approval of the applicant's dissertation topic. The applicant must submit an outline of his proposed topic in some detail, indicating by chapter and division within chapter the exact scope of the project. There should be a bibliography for each chapter listing books, reports, cases, and articles to be considered. Although the outline cannot predict every detail of the subsequent research, it must be sufficiently definite to afford the faculty a basis for evaluation.

DEGREE REQUIREMENTS

Juris Doctor, Master of Laws, and Doctor of Juridical Science—Degree requirements for foreign students are the same as those stated on pages 11-13, 16, and 17-18.

Master of Comparative Law—The student must complete a residence period of not less than two semesters, which should be continuous. All requirements for the degree must be completed in a period not exceeding three years from the time of registration for the degree. The student must complete satisfactorily 24 semester hours of approved courses of the Center, or of such other departments of the University as the faculty of the Center shall approve.

Master of Comparative Law (American Practice).—The requirements for this degree are the same as those for the degree of Master of Comparative Law except that the degree of Master of Comparative Law (American Practice) requires 28 semester hours of course work with a cumulative average of at least 65.

Unclassified Students

THE FOLLOWING TYPES OF STUDENTS may be admitted to the National Law Center as Unclassified Students:

1. A candidate for a Bachelor of Laws or Juris Doctor degree with an above-average record at another law school which is a member of the Association of American Law Schools or is approved by the American Bar Association, may at the discretion of the Dean, be admitted as an Unclassified Student to earn credits for transfer to the other law school.

2. Graduates of law schools which are members of the Association of American Law Schools or are approved by the American Bar Association who wish to take advanced courses without pursuing degree programs. Applicants with inferior records will not be admitted.

Unclassified Students participate in the work of the course, take examinations, and have their grades recorded. Credit earned as an Unclassified Student may be credited toward Master's and Doctor of Juridical Science degrees at this institution if the student transfers to degree status.

Continuing Legal Education

MEMBERS OF THE BAR wishing to keep abreast of current developments in the law may register for any of the courses in the National Law Center on a non-credit basis as Continuing Legal Education students. Such students do not take examinations in courses and no grades are recorded for their work.

A simplified admission and registration procedure is used and must be completed on or before the last day of regular registration for the appropriate semester. Continuing Legal Education students pay only the tuition fee on the semester-hour basis. They may not participate in student activities or benefit from the medical privileges of the University. (Continuing Legal Education registrations are subject to cancellation if courses are filled by regularly registered students.)





GENERAL INFORMATION

DAY AND EVENING CLASSES

DAY CLASSES meet in the mornings in fifty-minute periods and in the afternoons in fifty-minute periods and also in sessions of two fifty-minute periods, Monday through Friday. Trial Practice Court meets for two-hour periods on Saturday mornings.

Evening classes meet from 5:50 to 7:40 p.m., Monday through Friday. A four-credit course, e.g., Evidence, meets two evenings a week; a three-credit course, e.g., Administrative Law, meets two evenings a week for one-half the semester and one evening for the other half; a two-credit course, e.g., Contracts II, meets one evening a week. The evening division conforms to the standards of the day division, the full-time faculty participating in the instruction.

Examinations for both day and evening classes may be given in the afternoon only. Examinations for day students may be given in the evening only.

SUMMER TERM

A term of two sessions, with day and evening classes, is offered in the summer. Continuing students and transfer students may register for either or both sessions. *No beginning students are admitted to the Juris Doctor program in the summer term.*

The summer term is shorter than a semester of the academic year, and, as a consequence, a student must attend two and one-half summer terms to receive residence credit for one academic year or attend one and one-half summer terms to receive residence credit for a semester.

A maximum of 6 semester hours may be taken each session by day students. Day students receive four-tenths of a semester of residence credit for each session of the summer term in which they are registered for 3 or more semester hours. A maximum of 4 semester hours may be taken each session by evening students. Evening students receive three-tenths of a semester of residence credit for each session of the summer term in which they are registered for 2 or more semester hours.

Summer students planning to take the New York bar examination must register at the beginning of the term for both sessions and must complete both and carry a program of at least ten classroom periods a week for day students and at least eight classroom periods a week for evening students.

THE LAW LIBRARY

The Law Library of substantially over 100,000 volumes, housed in the new Jacob Burns Law Library building adjacent to the main Law Center building, contains the official reports of the decisions of the courts of last resort of all states prior to the National Reporter System, and of some states complete to date; the reports of lower appellate courts for some states; the National Reporter System, complete; the reports of the United States Supreme Court and lower Federal courts, and the reports of federal administrative agencies; Shepard's Citations for the units of the Reporter System and for nearby states; the English Reports, Full Reprint; the English Law Reports; the Times Law Reports; the Dominion Law Reports; the United States statutes at large and codes (official and unofficial); complete sets of annotated statutes of all the states; the English statutes; the Canadian statutes; the principal English and American digests and encyclopedias; collections of special reports and annotated cases; United Nations documents and printed publications in English, including the complete United Nations and League of Nations Treaty series; and standard textbooks, treatises, and monographs. Approximately 600 legal and related periodicals and journals are currently received. The Law Library incorporates the collection received from National University Law School in 1954 at the time of the merger of the two schools.

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card, issued upon payment of fees, must be presented as identification.

Also available to law students are 50,000 bound volumes and 20,000 pamphlets of the former library of the Carnegie Endowment for International Peace, in the fields of international law and relations, history, and economics, in the University Library.

Admission

APPLICANTS ARE URGED to submit application forms and complete credentials well in advance of the semester for which they seek admission. Two recent signed photographs and an application fee of \$25 for a degree candidate, \$5 for an Unclassified Student, must accompany the application.

Forms for application for admission or readmission are available at and should be returned to the Office of the Dean of the National Law Center, George Washington University, Washington, D.C. 20006.

For further details concerning students from foreign institutions, see pages 18-20.

APPLICATION FOR ADMISSION

Juris Doctor Program.—Beginning students are admitted only at the start of the fall semester.

To provide time for the evaluation of credentials of beginning students, all papers, including the Law School Admission Test score, should be received by May 1. This means that the November, February, or April Law School Admission Test should be taken (see "Entrance Requirements," pages 10-11).

All papers of transfer students should be received by the Office of the Dean no later than May 1 for the fall semester, December 1 for the spring semester, and one month prior to registration for the summer session for which application is made.

Master's and Doctoral Programs.—Students are admitted at the beginning of the fall semester, the spring semester, or any of the summer sessions.

Application for admission, together with all required credentials, must be received by August 1 for the fall semester, December 15 for the spring semester, and one month prior to registration for the summer session for which application is made.

Unclassified Students.—Students are admitted at the beginning of the fall semester, the spring semester, or any of the summer sessions.

1. Application for admission, with required credentials, for a student who wishes to earn credits for transfer toward a Bachelor of Laws or Juris Doctor degree at another law school (see page 20), should be received at the Office of the Dean at least one month prior to the first day of registration for the semester or summer session for which application is made.

2. Application for admission, with required credentials, for lawyers who wish to take graduate courses (see page 20), should be received at the Office of the Dean by August 1 for the fall semester, December 15 for the spring semester, and one month prior to registration for the summer session for which application is made.

Continuing Legal Education Students.—Students file a simplified form at any time prior to the first day of classes of the term concerned. No application fee is required, and no credentials are necessary.

READMISSION

A student who was previously registered but did not attend during the most recent semester (summer term excluded) should file an application for readmission. Closing dates for readmission are the same as those for admission (see pages 24–25).

If the student has attended one or more higher institutions during his absence from the University or if he applies as a degree candidate and was previously a nondegree student, he must have complete, official transcripts sent to the Dean.

Registration

BEFORE ATTENDING CLASSES each student must present himself in person for registration. No student will be registered until proper credentials have been filed and approved (see "Admission").

No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in George Washington University and another institution without the prior permission of the dean of the college, school, or division in which he is registered in this University. Registration in more than one college, school, or division of the University requires the written permission of the deans concerned, prior to registration. Allowance of credit

for work done concurrently at another institution will be at the discretion of the Dean.

ELIGIBILITY FOR REGISTRATION

No student who is suspended or whose record is not clear for any reason is eligible to register.

New Student.—Upon receipt of a letter of admission a new student is eligible for registration on the stated days of registration.

Readmitted Student.—A student previously registered who was not registered for courses during the preceding semester or summer session must apply for and receive a letter of readmission (see "Readmission," page 25) before he is eligible for registration.

TIME AND PLACE OF REGISTRATION

Registration is held in Stockton Hall, 720 Twentieth Street, N.W., during the following periods: *fall semester*, September 15 and 16; *spring semester*, January 29–31. Hours of registration will be announced in the *Schedule of Classes*, which will be available well in advance of each semester.

A late-registration fee of \$15 is charged each student who is permitted to register after the regular registration days.

Registration may be changed only with the permission of the Dean.



Fees and Financial Regulations

THE FOLLOWING FEES AND FINANCIAL REGULATIONS were adopted for the academic year 1969-70. (See page 28 for projected tuition increases for 1970-73.)

Tuition Fees

All law students except candidates for the degree of Doctor of Juridical Science:

| | |
|--|----------|
| Full-time program (11 hours or more), each semester..... | \$850.00 |
| Part-time program, each semester hour..... | 64.00 |
| Doctor of Juridical Science,* including the final examination..... | 1,800.00 |

University Center Fee (nonrefundable)

| | |
|--|-------|
| For students registered for 11 or more semester hours: | |
| Each semester..... | 37.50 |
| For students registered for less than 11 semester hours in a semester: | |
| For each semester hour for which the student registers..... | 3.50 |
| For students maintaining "continuous registration" status: | |
| Each semester..... | 3.50 |

Graduation Fees

| | |
|---|-------|
| Juris Doctor, Master's, Doctor's degrees..... | 25.00 |
| Fee for binding Master's Thesis..... | 10.00 |
| Fee for Microfilm Service and Printing Abstract of Doctoral Dissertation..... | 55.00 |

Residence Hall Fees (see page 41)

Special Fees

| | |
|---|--------|
| Application fee (degree candidate), nonrefundable..... | 25.00 |
| Application fee (unclassified student), nonrefundable..... | 5.00 |
| Application fee for room reservation, nonrefundable..... | 100.00 |
| Tuition deposit fee charged each student admitted to J.D. degree candidacy..... | 100.00 |
| Special fee (Student Bar Association activities, Law Review, and other services), charged each student (except students registered for "continuous registration") for each semester or any part thereof except the summer term..... | 10.00 |
| Fee for special examinations, for each subject..... | 5.00 |
| Late-registration fee, for failure to register within the designated period..... | 15.00 |
| Continuous Registration fee, for post-J.D. students, to maintain "continuous registration" during any semester of absence from the University or after completion of tuition requirements.† Due and payable on the official days of registration..... | 64.00 |

* The tuition fee is to be paid at the rate of \$450.00 a semester for four successive semesters, exclusive of the summer term or terms. No "continuous registration" fee can be charged if a third year is needed for completion of the degree requirements. If the Faculty should require an extension of time, the student must maintain continuous registration and pay the continuous registration fee. The continuous registration fee applies toward neither financial nor residence requirements for the degree. This fee does not apply to students granted military leave (see page 39).

| | |
|--|--------|
| Service fee for deferred payment plan (see "Payment of Fees," pages 28-29) | \$5.00 |
| Reinstatement fee, for reinstatement after financial suspension for non-payment of fees | 15.00 |
| Returned check fee, charged a student whose check is returned because of insufficient funds or improper drafting | 15.00 |
| Transcript fee, for each transcript of record | 1.00 |

Registration on campus in the University entitles each student to the following University privileges: the services of the Student Career Services Office; the use of University Library; gymnasium privileges; admission to all athletic contests, unless otherwise specified; subscription to the *University Hatchet*, the student newspaper; admission to University debates; medical attention and hospital services as described under "Health Services" (see pages 42-43). These privileges terminate and a student is no longer in residence when he withdraws or is dismissed from the University.

PROJECTED TUITION INCREASES 1970-73

In order that students and their parents may plan more realistically, tuition increases for the academic years 1970-71, 1971-72, and 1972-73 have been estimated as follows:

*Increase by year (full-time students):

| | |
|---------|----------|
| 1970-71 | \$100.00 |
| 1971-72 | 100.00 |
| 1972-73 | 200.00 |

Increase by semester hour (part-time students):

| | |
|---------|------|
| 1970-71 | 4.00 |
| 1971-72 | 4.00 |
| 1972-73 | 6.00 |

It is not possible to project future economic data with certainty. Barring a severe change in the national economy, however, the above listed tuition schedule will be followed.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier. Checks and postal money orders should be made out to George Washington University. No student is permitted to complete registration or attend classes until all fees are paid.

Tuition and fees for each semester are due and payable in full at the time of each registration.

The Student Accounts Office has responsibility for creating, billing, and maintaining student accounts resulting from tuition and room and board charges. A student registered for six semester hours or more may sign a contract with this Office at the time of each registration permitting him to pay one-half of the total tuition and fees (except for fees payable in advance) at the time of registration and the remaining half on or before November 5, 1969 (for the fall

* These yearly increases are also projected for the total fee for work leading to the degree of Doctor of Juridical Science.

semester), and March 18, 1970 (for the spring semester). A service fee of \$5 will be charged for the use of this deferred payment plan. The University will not obligate itself to notify the student, in advance, of the payment-due date for the second half of the semester charges. Students who fail to make any payment when due will be automatically suspended and may not attend classes until they have paid all accrued fees and a \$15 reinstatement fee and have been officially reinstated by the Student Accounts Office.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Student Accounts Office.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

The National Law Center has been able in recent years to assist substantially all students in obtaining the financial aid they required, through full or partial scholarships, various loan programs, part-time employment, or a combination of these kinds of assistance. There are a number of sources for financial assistance available to students at the Law Center. These include the various state guaranteed education loans, loans under the National Defense Education Act, under the American Bar Association loan program, and under the United Student Aid loan program.

In addition, there are various plans available, through the Girard Trust Exchange Bank, Philadelphia, Pa.; Funds for Education, Inc., Manchester, N.H.; and the Riggs National Bank, Washington, D.C.; by which students may, if they meet various conditions, borrow money on a relatively short-term basis.

Full details concerning these funds are available in the Office of the Dean.

WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean. Withdrawal from courses is permitted after the midpoint of a semester only in extraordinary circumstances. Notification to an instructor is not an acceptable notice.

In authorized withdrawals and changes in schedule, cancellations of semester tuition charges and fees will be made in accordance with the following schedule:

1. Complete withdrawal from the University:

FALL SEMESTER

| | |
|--|-------------|
| Withdrawal dated on or before September 26, 1969..... | 90 per cent |
| Withdrawal dated September 29 to October 10, 1969..... | 75 per cent |
| Withdrawal dated October 13 to October 24, 1969..... | 50 per cent |
| Withdrawal dated after October 24, 1969..... | none |

SPRING SEMESTER

| | |
|---|-------------|
| Withdrawal dated on or before February 6, 1970..... | 90 per cent |
| Withdrawal dated February 9 to February 20, 1970..... | 75 per cent |
| Withdrawal dated February 23 to March 6, 1970..... | 50 per cent |
| Withdrawal dated after March 6, 1970..... | none |

2. For a change in status from full-time to part-time student or for partial withdrawal by a part-time student, the above schedule applies to the differ-

ence in charges between the original program and the adjusted program continuing in effect.

3. A student enrolled in a full-time program who drops or adds a course and continues to be in a full-time program will have no financial adjustments of tuition made other than those involving course fees.
4. A student who is granted military leave before completing a semester is given credit for all tuition paid for that semester for use upon his return to the University. No tuition will be refunded to a student granted military leave (see Military Leave, page 39).

In no case will tuition be refunded or reduced because of absence from classes. Payment applies only to the semester for which a registration charge is incurred, and in no case will this be credited to another semester.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Students are encouraged to provide their own cash funds until they can make banking arrangements in the community.



Financial Aid

JURIS DOCTOR PROGRAM

SCHOLARSHIPS AND RESEARCH ASSISTANTSHIPS

APPLICATION AND CORRESPONDENCE concerning scholarships and research assistantships should be sent directly to the Dean. Unless otherwise specified, application and supporting credentials should be submitted no later than March 1 preceding the period for which the award is made.

Mildred Gott Bryan Scholarship Fund (1965).—Partial scholarship aid for students in the National Law Center.

Charles Worthington Dorsey Memorial Scholarship (1947).—Memorial to Charles Worthington Dorsey, LL.B. 1881, LL.M. 1882. A full-tuition scholarship for the course leading to the degree of Juris Doctor, awarded to a needy and promising graduate of this University with a Bachelor of Arts or equivalent degree. Ordinarily this scholarship is awarded once every three years.

Honor Scholarships.—Two scholarships available each year to students entering upon full-time study. Each scholarship provides a cash award for the first year in addition to tuition aid, in an amount depending on need, for all three years. These scholarships are awarded on the basis of outstanding college records, both academic and extracurricular; Law School Admission Test scores; and need. To retain the scholarship for the second and third years, the candidates must maintain a *B* average, both for each year and cumulative.

Phi Delta Delta Scholarships (1959).—Zeta Chapter of Phi Delta Delta Legal Fraternity (International), provides tuition aid to a woman student in the second year of the Juris Doctor program who excelled in scholastic achievement and service to the Center in her first year.

Research Assistantships.—Available each year to students currently enrolled, preferably to applicants who are engaged in *Law Review* work. Each assistant receives an annual stipend. Awards are made on the basis of academic standing, financial need, capacity for leadership, and research and writing potential. Applications should be submitted no later than July 1.

Research Scholarships.—Available each year to students currently enrolled, preferably to applicants who are completing the second year. Scholarship awards are made on the basis of academic standing, financial need, capacity for leadership, and research and writing potential. Applications should be submitted no later than July 1.

Trustee Scholarships.—Scholarships awarded each year to entering students, for tuition aid, in an amount depending on need, in the morning division. Candidates must have demonstrated qualities of leadership in addition to scholastic attainment. To retain the scholarship, the successful candidate must maintain a *B* average, both for each year and cumulative. Application must be made before March 1 to the Dean.

Tuition-aid scholarships are also available to continuing second- and third-year full-time students with demonstrated scholastic ability, on the basis of financial need and capacity for leadership. Application should be made to the Dean prior to July 1. Scholarships are awarded after spring-semester grades are reported.

LOAN FUNDS

Through the generosity of friends of the University a number of loan funds are available. Among them are the Robert Ash Loan Fund; the George R. Beneman Loan Fund; the Robert M. and Mary McConnel Cooper Loan Fund; the District of Columbia Bar Association Loan Fund; the Harold L. and Violet George Foundation Loan Fund; the George Washington Law Association Loan Fund; the Jephson Educational Trust Loan Fund; the Law Association Loan Fund for the law classes of 1912, 1921, 1924, 1929, 1931, 1933, 1935, 1936, 1937, 1938, 1939, 1941, 1942, 1945, 1950, 1951, 1952, 1953, 1955, 1959, 1960, 1961, 1962, 1963, 1964, 1965; the Oscar Lawler Memorial Loan Fund; the Horace L. Lohnes Memorial Assistance Fund; the Jessie B. Martin Loan Fund; the Mike Pelekiri Loan Fund; and the Orville Hassler Walburn Memorial Loan Fund. Applications for loans should be made in the Office of the Dean.

MASTER'S AND DOCTORAL PROGRAMS

FELLOWSHIPS AND RESEARCH OPPORTUNITIES

Application should be made before March 15 preceding the period for which the award is made. The applicant should submit an application for admission as a degree candidate and a personal letter applying for a fellowship to the Dean. The letter of application should contain complete biographical data, information as to experience in practice or teaching and his draft or military status, copies of or citations to his published legal writings, and such other information as he believes will be of assistance in the consideration of his application. He should arrange for letters of recommendation to be sent from two members of his law faculty directly to the Dean. His academic rank in class should be included either in the transcript of his law school record or in the letters of recommendation.

Computers-in-Law Fellowship.—Available each year to a post-J.D. student who has competence in some aspect of applied computer science and is conversant with at least one programming language sufficient to enable him to code his own system design. The recipient will receive a stipend of \$6,000 plus tuition for the academic year for research and related study in the combined computer and law disciplines. His study is under the direction of a faculty member associated with the Computers-in-Law Institute. University courses in computer software or hardware will be available, if needed, as part of his degree program.

Thomas Alva Edison Fellowship.—A \$6,000 fellowship for advanced study of the patent and related systems is made available annually to the Patent, Trademark, and Copyright Research Institute of the University by the Thomas Alva Edison Foundation for award to a qualified advanced student in one of the schools of the University. The recipient of the fellowship is expected to follow an approved program of research under the supervision of a member of the Staff of the Patent, Trademark, and Copyright Research Institute assigned as counselor to the fellow. He must satisfactorily complete the degree requirements, including a thesis on a subject in a field of the Institute's interest. This fellowship can be made available to the same candidate for two consecutive years when the Research Institute considers such extension to be in the best interests of the fellowship objectives.

Fellowship in Government Procurement Law.—A fellowship of \$6,000 plus tuition, for a program leading to the degree of Master of Laws with specialization in Government Procurement Law. The fellow takes 12 semester hours of approved courses over two semesters. The balance of his time is spent in research, writing, and editorial work under the guidance of the staff of the University's Government Contracts Program. The candidate is chosen on the basis of ability to do superior legal work, demonstrated by law school record or work experience, and genuine interest in government procurement law.

Richard Paul Momsen Fellowship for Brazilian Graduate Law Students.—Bequest of Richard Paul Momsen, LL.B. 1912. Awarded 1970-71 and alternate years, for the study of U.S. constitutional law.

Teaching Fellowships.—Two fellowships available each year with a stipend of \$6,000 plus tuition for an approved course of study leading to an advanced degree. Teaching fellowships are awarded for a term of two academic years. Fellows conduct the first-year course in Legal Research and Writing, hold regular class meetings, and work with the students to improve their legal writing ability.

Research Study Opportunities.—In addition to the above fellowships, research assistantships with opportunity for graduate study are available with the program of Law, Science, and Technology; and the Government Contracts Program.

Prizes

American Security and Trust Company Award.—A cash award to a graduating senior for the most effective work in the course in estate planning.

Charles Glover Prize.—Established by Charles Carroll Glover, Jr., an Honorary Trustee of the University, in memory of his great-grandfather, an illustrious member of the bar of the District of Columbia. Consists of selected law books. Awarded annually to the student who has attained the highest average grade in the third-year, full-time course.

Kappa Beta Pi Prize.—A copy of Blackstone's *Commentaries* or a legal dictionary awarded annually by Eta Alumnae Chapter to the woman law student who attains the highest average for the first year.

John Bell Lerner Prize.—By bequest, a medal is awarded annually to the member of the graduating class who attains the highest average grade in the entire course for the degree of Juris Doctor.

John Ordronaux Prizes.—By bequest, \$75 is awarded annually to the student who has attained the highest average grade in the first-year, full-time course; and \$75 to the student who has attained the highest cumulative average grade at the end of the second-year, full-time course.

Jennie Hassler Walburn Prize.—A cash award to the outstanding student in the field of civil procedure, established by the will of the late Professor Orville Hassler Walburn in memory of his mother.



Regulations

ACADEMIC WORK LOAD

Juris Doctor Candidates.—Juris Doctor candidates without substantial outside employment may take a program of studies of 14 hours a week. Such students may take courses in the evening only if they are not available in the day time and if a majority of the hours taken are in day courses. The Dean is authorized to approve 15-hour programs in exceptional cases. Students with 20 hours or more of outside employment, whether in the day or evening division, must take a limited program of studies not exceeding 10 hours a week. Students taking a majority of their classes in the evening may not take more than 10 hours a week; the minimum load is 8 hours, except in special cases where 6 hours may be approved by the Dean for a limited time. A minimum schedule of 11 hours in the day division is required except in exceptional circumstances when a reduced program is authorized by the Dean.

Students taking more than 8 hours in the day division or 4 hours in the evening division must have the permission of the Dean to take a Bar Review course.

Students may transfer from the day division to the evening division only with the permission of the Dean.

With the approval of the Dean, second- and third-year students may take a maximum of 6 semester hours of appropriate courses in other departments of the University; such a student must receive a grade of at least *B* to obtain credit for such courses, and in no event will the grade count in computing his cumulative average.

Master's Candidates.—Master's candidates without substantial outside employment may take a maximum of 12 hours a week. Students with 20 hours or more of outside employment must take a limited program of study not to exceed 8 hours a week. The minimum load is 4 hours unless approval for fewer hours is given by the Dean for a limited time.

ATTENDANCE

Regular attendance at classes is required and is necessary for successful work. A student who is deficient in class attendance in any course may be barred from taking the examination.

CHANGES IN PROGRAM OF STUDIES

A student may not drop or add courses or change from one section to another of the same course without the approval of the Dean.

RESEARCH PAPER IN LIEU OF EXAMINATION

The preparation of a research paper is required in lieu of an examination in seminars and in other courses, as indicated in the course descriptions by (RP). The research paper must be submitted by the last day of classes of the semester; for sufficient reason, the instructor may extend this time to the end of the examination period. No further extension may be granted. Students who are candidates for the J.D. degree may register for one such course in each semester of their third year; with the approval of the Dean such students may register

for more than one such course each semester. Approval of the Dean is required for second-year students to take such courses.

EXAMINATIONS

Written examinations are held at the end of most courses. Every student is required to take the regular examinations unless excused. No excuse for absence will be granted except by the Dean and then only for illness or other emergency. Application for excuse must be made in writing not later than one month after the date of the examination. An entry of *I*, incomplete, will be made on the record of a student thus excused. To receive credit for the course, he must take the next regularly scheduled examination. The examination may not be taken after exclusion for low scholarship.

Permission to take an examination before the regularly scheduled date will not be granted. Permission to take a postponed examination is limited to the situation provided for in the preceding paragraph.

A student who has been excused from taking a regular examination and who is a candidate for a degree to be conferred prior to the next regular examination in the subject may petition the scholarship committee, which may authorize such action as the circumstances require.

If a student fails to take an examination, a grade of 45 will be recorded unless he has been excused from the examination as provided above or has obtained the Dean's permission to drop the course.

CREDIT/NO CREDIT OPTION

Candidates for the degree of Juris Doctor may, with the permission of the instructor, take 3 semester hours of course work on a "credit/no credit" basis.



GRADES

Grades are given in numerical terms equivalent to letter grades as follows: 85–100, *A*, excellent; 75–84, *B*, good; 65–74, *C*, satisfactory; 55–64, *D*, poor—below standard for graduation; 45–54, *F*, failure. In courses 220, 321–22, 346, 365, 366, 385, and 386 grades are *CR*, credit; *NC*, no credit. A student who has been excused from failure to take a regularly scheduled examination is given the grade of *I*, incomplete, and a student who has been barred from taking an examination because of excessive absences is given the grade of *EA*. See “Examinations” (page 36) for grade upon failure to take an examination. Grades between 55 and 100 indicate that the work has been completed and credit given. Grades between 55 and 64, however, do not represent satisfactory work and adversely affect a student’s cumulative average. No credit is given for grades below 55. A student may not repeat a course he has failed.

The cumulative average of a student includes all grades in all courses taken while he is a candidate for a particular degree. When a course is repeated (see “Academic Dishonesty,” page 39), both the first grade and the subsequent grade or grades are counted in the cumulative average.

EXCLUSION AND PROBATION FOR POOR SCHOLARSHIP

Candidates for the Degree of Juris Doctor.*—A student whose cumulative average at the end of any semester falls below 65.0 but is above 64.0 will be notified that he is on probation. If such a student fails to raise his cumulative average to 65.0 at the end of the next semester, he will not be permitted to register for any succeeding semester unless he petitions for and receives the permission of the Scholarship Committee.

A student whose cumulative average at the end of any semester falls below 64.0 will not be permitted to register for any succeeding semester unless he petitions for and receives the permission of the Scholarship Committee so to register.

A student who fails more than one course over his entire period of law study will not be permitted to register for any succeeding semester unless he petitions for and receives the permission of the Scholarship Committee.

A student who is not permitted to register under the foregoing provisions will be excluded as of the beginning of the semester for which he was ineligible to register.

Students who are registered at the time they receive notice that they will not be permitted to register for the next semester are entitled to withdraw from school and to receive a full refund of the tuition for the semester, or to complete the work for which they are registered.

Any student excluded may petition for reinstatement; if he can demonstrate that his low grades were due to circumstances beyond his control and that he has the capacity to pursue the study of law with a definite likelihood of success, he may be readmitted subject to such conditions as may be imposed by the Scholarship Committee.

Despite the above provisions, a student will be allowed to complete his first two semesters of law study before he is denied permission to register for a succeeding semester.

The term “semester” includes a session of the summer term.

*These rules apply to new and readmitted students beginning with the 1966–67 fall semester.

Candidates for Masters' and Doctoral Degrees.—A candidate for a Master's or doctoral degree whose work is not satisfactory in the opinion of the faculty taking into consideration the requirements and standards for the degree, may, by action of the faculty, be excluded at the end of the semester for which he is currently registered.

Unclassified Students.—An unclassified student whose work is not satisfactory in the opinion of the faculty may, by action of the faculty, be excluded at the end of the semester for which he is currently registered.

SUMMER SCHOOL CREDIT

Students planning to attend summer school sessions at other law schools and desiring to use credits obtained at such schools in their Juris Doctor program at this Center must first have the courses they wish to take approved by the Dean. In no event will credits be recognized in excess of those which might be obtained in a similar period in this program.

TRANSCRIPTS OF RECORD

Official transcripts of student records will be issued on request of the student or former student. A fee of one dollar is charged for each transcript. No transcript will be issued for a person who does not have a clear financial record.

CONTINUOUS REGISTRATION

Post-J.D. degree candidates are expected to maintain continuous registration until all degree requirements are satisfied. Students who have completed course registration may maintain continuous registration by paying the "continuous registration" fee (see page 27). By failing to register for one semester or more, the student breaks his registration and must be readmitted (see "Readmission," page 25). A "Readmitted Student" is required to satisfy the curriculum requirements existing at the time of his readmission. *Continuous registration does not apply to J.D. degree candidates.*

GRADUATION REQUIREMENTS

Diplomas are awarded at a February Convocation, at a June Commencement, and in September.

To be recommended by the Faculty for graduation, a student must have met the admission requirements of the National Law Center; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered; and be free from all indebtedness to the University. Registration, either for course work or on the "continuous registration" fee basis, is required for the semester or summer session immediately preceding the awarding of the degree.

Application for Graduation.—An "Application for Graduation" form must be filed and the appropriate fee paid at the time of registration for the last semester or summer session of the final year. Students completing degree requirements during the Summer Sessions will be awarded diplomas (no formal convocation) September 30, *provided* they have completed all degree requirements and have applied for graduation as a part of registration for the Summer Sessions.

ACADEMIC DISHONESTY

Academic dishonesty on the part of any student will result in a disciplinary grade of *F* for the course involved and also may, upon the recommendation of the Dean's Council, result in his suspension from the University for a stated period, at the end of which time he may petition for readmission. The disciplinary grade of "Failure—Academic Dishonesty" will be recorded for the course involved, and this grade will be employed in the computation of the quality-point index. A student so suspended shall be withdrawn from all other courses except those in which all work has been completed.

MILITARY LEAVE

A student called to active duty may be granted military leave for the period of active duty, upon presentation to his Dean of a copy of his orders and a petition for such leave. The maintenance of "continuous registration" is not required of the student on military leave; however, he must apply for readmission to the University well in advance of the semester in which he expects to return. If a student is granted military leave before he completes a semester for which he has paid all or part of his tuition, this payment will be credited to his account for use upon his return to the University. In no case will tuition be refunded to a student granted military leave.

UNIVERSITY POLICY ON THE RELEASE OF STUDENT INFORMATION

In general, the policy of the University is one of attempting to keep the student's record confidential and out of the hands of those who would use it for other than legitimate reasons. At the same time, the policy must be flexible enough not to hinder the student, the University, or the community in their legitimate endeavors.

No information concerning a student will be released by the Office of the Registrar, except as noted below, save on court order or subpoena, or upon written request by the student:

1. Information which is of public record, such as whether or not the student is currently enrolled; dates of attendance; whether or not he received a degree; current address and telephone number; the school or college in which he is enrolled.

2. The issuance of formal transcripts of record to recognized institutions of higher learning; the certification of academic achievement to the various recognized professional associations (law, medicine, engineering, education, etc.); and the inspection of records, under appropriate supervision, by properly validated representatives of government investigative agencies.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

RIGHT TO DISMISS STUDENTS

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration.

The right is reserved by the University to dismiss or exclude any student from the University or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Campus Police Office.

RECENTLY ESTABLISHED REGULATIONS

An Appendix (pages 123-24) contains regulations recently approved by the University's Board of Trustees.

University Computer Center

THE UNIVERSITY COMPUTER CENTER is located on the first floor of Stuart Hall, 2013 G Street, N.W. The facilities of the Center are available for academic purposes to all registered students and to members of the instructional staff. The Center has as its principal mission the provision of a powerful computing system which serves the University in its educational and research endeavors. The Center's programming staff concentrates its efforts in conducting faculty and staff seminars, consulting with users in the preparation of complicated programs, and carrying out computer-oriented research.

The Computer Center equipment consists of an IBM system 360 Model 50 computer with 256,000 positions of core storage, a 2,314-disk storage unit providing on-line storage for more than 200 million characters, a card read/punch, a high speed line printer, and four tape drives. The principal languages that are available are FORTRAN IV, COBOL, Programming Language One (PL/I), Assembly Language, Report Program Generator (RPG), and ALGOL. In addition, there are numerous utility, statistical, data manipulation, and simulation systems available in the Computer Center Library of Programs. Facilities are available on a first-come first-served basis for preparation of programs and data.

Computer programming courses are offered by the School of Government and Business Administration, the Department of Statistics, and the School of Engineering and Applied Science. In addition, many other departments offer courses that utilize the computer as a research adjunct to course work.

The Computer Center is open 24 hours a day Monday through Thursday and until midnight on Friday. Saturday hours are 9 a.m. to 5 p.m.

Student Services

RESIDENCE HALLS

COMPLETE INFORMATION concerning the University's residence halls is available from the Housing Administrator, George Washington University, Washington, D.C. 20006. Information concerning off-campus housing near the University may be obtained at this Office. The reservation of rooms in private houses must be made by students.

Admission to the University does not include a room reservation. The student will receive, with his notification of acceptance, University residence hall information, an application for residence hall space, a medical examination form, and a declaration of intent to attend the University. The medical examination form must be completed by the applicant and his physician and returned to the University Health Services Office. The application for residence hall space must be accompanied by a \$100 *nonrefundable deposit*, which is credited toward the second semester's room charge. Rooms are leased for the academic year, and payment must be made in advance of each semester.

1969-70 RESIDENCE HALL RATES PER PERSON FOR TWO SEMESTERS

Madison Hall (men): room and food service, \$1,220; room only, \$650.
Graduate Women's Hall: room \$700. Apartments in this hall have kitchen facilities; however, food service is available, if desired, at \$570.

FOOD SERVICE

Well-balanced meals are served cafeteria style seven days a week (20 meals). Food service payment does not cover University holidays or vacation periods. All meal cards admit to the dining rooms in Thurston Hall and Mitchell Hall.

UNIVERSITY CENTER

The term University Center encompasses a building, an organization, and a program. The building is the University's center for community life. It is the physical instrument for implementation of the programs and objectives of the organization.

The organization, composed of students, faculty, administrators, and alumni, provides an informal education medium for individual and group activities adapted to the leisure-time interests and needs of the college community. It also provides training for those directly involved in management and programming for the Center.

The primary purpose of the George Washington University Center is the continuing development of a broad cultural, intellectual, social, and recreational program. Its secondary purpose is the provision of its various services and facilities to the campus community for the development of community life.

The Center houses a wide range of facilities to serve the needs of the campus, including dining rooms and a rathskeller, a bookstore, lounges and study areas, a theater, bowling lanes and a billiard room, a faculty club, student organization offices and workrooms, meeting and conference rooms, an information

center, music listening rooms, social areas, shower and dressing rooms, lockers, and parking accommodations.

HEALTH SERVICES

The Health Services Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open Monday through Friday, from 9 a.m. to 10 p.m. during the academic year and from 9 a.m. to 9 p.m. during the Summer Sessions, with physician in attendance. On Saturdays, a physician is available from 9 a.m. until 12 noon. For night and weekend emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges also include hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Services.* All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses, orthopedic examinations and application of cast or other appliance, laboratory and X-ray work, and surgical operations, must be paid by the student.

These medical benefits apply only to illness or disability incurred while currently enrolled in the University. They do not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student may, if he so desires, engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) the Director of Health Services is empowered to limit or deny the medical benefits when, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education.

HEALTH AND ACCIDENT INSURANCE

In addition to the above services, the Health Services Staff has arranged for Health and Accident Insurance, on an elective basis, for all full-time students. Arrangements for insurance coverage are the responsibility of the student, and should be made during the fall or spring registration period, or at the very latest

* See rule 4 for exception.

within five school days after the end of the registration period. Payment must be made at the time the student subscribes to the policy.

Coverage is effective, whether at the University, at home, or elsewhere, for the entire six-month period of the policy—September through February for those subscribing in the fall, March through August for those subscribing in the spring.

This policy contract is between the individual student and the insurance carrier and is accepted at any hospital or emergency room that accepts this type of medical work. Details of the policy are contained in a folder available at the Health Services Office.

STUDENT EMPLOYMENT

The Law Center helps in the placement of its students and maintains a placement service for that purpose. In addition, the Student and Alumni Career Services Office, Woodhull House, 2033 G Street, N.W., provides assistance to students seeking full-time, part-time, or temporary employment. This Office maintains a registry of positions available and refers qualified applicants for consideration. Information is also available on Civil Service examinations.

A student taking more than ten semester hours must limit outside employment to less than twenty hours (see "Academic Work Load," page 35). It is urged that full-time students refrain from engaging in outside employment during their first year. Although work in some special areas may contribute to the learning and experience of the student, as a general rule it will compete with time needed for adequate study and preparation, which are at the heart of a good legal education.

PLACEMENT SERVICE

The Law Center takes a continuing interest in the placement of its graduates in private practice and governmental service as well as with industry and commerce. The Dean, the Faculty, and the Placement Office cooperate in collecting information from alumni, law firms, and government agencies concerning opportunities in legal positions throughout the country. Senior law students and recent graduates are urged to keep in touch with the Placement Office.

VETERANS EDUCATION

The Office of the Registrar, Luther Rice Hall, 2121 Eye Street, N.W., assists students entitled to educational benefits as veterans or war orphans with any problems which may arise concerning their benefits. This Office also processes certification of enrollment and attendance to the Veterans Administration so that monthly allowances will be paid.

When feasible, students entitled to benefits as veterans or war orphans should consult the Office of the Registrar prior to submitting application to the Veterans Administration. All such students should obtain the instruction sheet issued by the Office of the Registrar, which sets forth requirements to be fulfilled before certification of enrollment can be made to the Veterans Administration, and which includes other information of general interest.

The Veterans Administration is at 2033 M Street, N.W., Washington, D.C. 20421.



COURSES OF INSTRUCTION

THE COURSES OF INSTRUCTION listed below are subject to change. The University reserves the right to withdraw any course announced.

The number of hours of credit given for the satisfactory completion of a course is indicated in parentheses after the name of the course. Thus, a year course giving two hours of credit each semester is marked (2-2), and a semester course giving two hours of credit is marked (2).

Courses and seminars marked (RP) require the preparation of a research paper in lieu of an examination.

Day classes begin at 9:10 a.m. and run throughout the entire morning and afternoon. Evening classes begin at 5:50 p.m. Many examinations for both day and evening classes may be given in the afternoon only. Examinations for day students may be held in the evening only.

COURSES FOR JURIS DOCTOR CANDIDATES

Required courses are numbered from 201 to 300. Courses numbered from 301 to 400 are normally taken by second- and third-year students. Courses numbered from 401 to 600 are generally more advanced. Second-year students may take courses numbered above 400 only with the permission of the Dean. Third-year students are encouraged to take one course numbered above 400 each semester, and may take more than one such course with the permission of the Dean.

REQUIRED COURSES

203-4 Contracts I-II (4-2)

Nash, Freedman, Cibinic, Pock, Ginsburg

Legal remedies of contracting parties, including damages in contract and quasi-contract, specific performance, reformation, rescission, remedies in tort; acts creating and terminating contractual rights, including offer and acceptance, mistake, problems of proof; function of consideration; conditions; assignments; third-party beneficiaries; effect of changed circumstances; protection of the client's interests upon breach or threat of breach by the other party. Emphasis on problems of analysis, draftsman'ship, adversary method. (Academic year—day and evening)

207 Torts (4)

Merrifield, Seidelson, Park, Banzhaf

Liability for harm to person or property. Intentional torts, negligence, nuisance, products liability, misrepresentation, defamation, and invasion of privacy; fault and other basis for shifting losses; causation; damages; effects of liability insurance; problems under Federal Tort Claims Act. (Fall—day and evening)

***210 Real Property (4)**

Starrs, Schiller, J. Brown

Historical background of the law of estates and conveyancing; types of estates; dower and curtesy; landlord and tenant relationship; concurrent estates; future interests at common law and after the Statute of Uses; Rule Against Perpetuities; incidents of divided ownership, as waste; natural rights. Open only to students who have completed former Law 209 (Offered last time fall 1969–70; summer 1969)

***211 Property I (4)**

Starrs, Schiller, Clingan, J. Brown

Basic concepts of personal property. Real property: historical background of the law of estates and conveyancing, types of estates, dower and curtesy, landlord and tenant relationship, concurrent estates, future interests at common law and after the Statute of Uses; introduction to modern conveyancing—the real estate contract, the deed, the recording system, methods of title assurance. (Spring—day)

212 Constitutional Law (4)

Dixon, Miller, H. Green, Barron

Basic principles of American constitutionalism; judicial function in constitutional cases; implementation of doctrines of separation of powers; federalism, limited government; development and exercise of national powers; introduction to civil rights and liberties. (Spring—day and evening)

215 Criminal Law and Procedure (4)

D. Green, Starrs, Allen, Robinson

Origin and purposes of criminal law; elements of criminal liability; mental disorders; crimes against the person, property, and against both; statutory offenses; criminal procedure, with consideration of Federal Rules of Criminal Procedure. (Fall—day; spring—evening)

218 Civil Procedure (4)

D. Green, Sharpe, Barron, Park

Mechanics of litigation—rules which govern process by which rights and duties studied in substantive law courses are enforced; pleadings, discovery, pre- and post-trial motions, jurisdiction and venue, equity jurisdiction and trial by jury, former adjudication. Emphasis on Federal Rules of Civil Procedure, but principles and main problems indigenous to all procedural systems are developed. (Fall and spring—day and evening; summer 1969)

220 Legal Research and Writing (2)

Seidelson and Teaching Fellows

(Replaces former Law 220, *Legal Method and Legal System*)
Introduction to and practical experience in the use of a law library; instruction and practice in legal writing, including a memorandum and appellate court brief; instruction and experience in the preparation and argument of an appellate court case. The grade CR (credit) or NC (no credit) is given for this course. (Fall—day and evening)

* Beginning with the academic year 1969–70, Law 211 will replace former Law 209 and Law 210

232 Evidence (4)

Seidelson, Robinson

Preparation and presentation of evidence, including proof of writings; qualification and examination of witnesses with emphasis on impeachment; privilege; opinion testimony; determination of relevancy; demonstrative, experimental, scientific evidence; application of the hearsay rule (Spring—day and evening; summer 1969)

ELECTIVE COURSES**302 Admiralty (2)**

Clingan

Doctrines originating in admiralty courts—prize, maritime liens, salvage, general average, negligence in ship collisions and otherwise, maintenance and care, unseaworthiness; maritime law from legislative origins—personal injury and death remedies, limits on shipowners' liability, regulation of carriage of goods and persons; admiralty jurisdiction and maritime law in the federal system. (Fall—day)

303 International Law and World Order (3)

Mallison

Traditional content of introductory course in international law presented in context of values and institutions of world community; emphasis upon national states as participants in decision-making processes with consideration also of individuals, international public organizations, political parties, pressure groups, private associations; analysis of range of available sanctions; roles and effects of international agreements under United States Constitution; introduction to the law of war. Complements but does not repeat material in Law 391. (Fall—day and evening; summer 1969)

307 Comparative Law (3)

Albert

Civil Law System, general introduction to foreign law as exemplified by Roman Law and French and German Civil Codes, comparative study of administration of justice and legal institutions. Delictual and contractual obligations. (Spring—day)

309 Conflict of Laws (3)

Dixon, Seidelson

Legal problems arising from occurrences transcending state or national boundaries; jurisdiction; foreign judgments; constitutional influences; theoretical bases of choice of law principles and their application to specific fields, including torts, contracts, property, family law, administration of estates, business associations. (Fall—day and evening)

311 Business Associations I (2)

Sharpe, Potts, Schiller, Carlson

Legal principles concerning association in business by agency, partnership, other unincorporated forms, and corporations; creation, form and nature of agency, partnership and corporation; basic principles of agency and partnership and introductory related principles of corporation law. (Fall—day and evening; summer 1969)

312 Business Associations II (4)

Kirkpatrick, Carlson

Corporate law, with emphasis on operations and financing of corporations. Control of corporations, action by corporate directors, officers, shareholders. Control devices. Directors' and shareholders' duties of care and loyalty, insiders' transactions in shares of the corporation. Derivative suits, kinds of shares, dividends, corporate distributions. (Spring—day and evening; summer 1969)

313 Sales and Sales Financing (2)

Albert, Rothschild

Provisions of the Uniform Commercial Code relating to sale and distribution of goods, including bulk transfers, warehouse receipts, bills of lading, and other documents of title; particular attention to secured transactions and financing devices utilized in this connection. (Fall—day and evening; summer 1969—Law 313 (3))

314 Commercial Paper, Check Collection, and Banking (2)

Albert, Rothschild

Classic view of negotiable instruments as codified by Article III of the Uniform Commercial Code. Check collection: the system in theory as expressed in Article IV of the Uniform Commercial Code and the system in practice; Federal Reserve regulations, Clearing House agreements, and automation systems. The dual banking system, work of the Comptroller General and the Federal Reserve Board. Legal problems concerning interest and the checkless society. (Spring—day and evening)

318 Creditors' Rights (3)

Kirkpatrick

Creditors' remedies outside bankruptcy—compositions, agreements, general assignments; bankruptcy proceedings under the federal statute, administration, discharge, the position and powers of the trustee, preferences; corporate reorganization under Chapter X of the Bankruptcy Act. (Fall—day and evening)

321-22 Current Decisions (2-2)

Limited to members of the student staff of the *Law Review*. The grade CR (credit) or NC (no credit) is given for this course. (RP) (Academic year—day and evening)

325-26 Trusts and Estates I-II (3-3)

Weaver, Kuhn

Noncommercial transfers of wealth at death or during life. *First half:* essential elements and formalities for creation of trusts and execution of wills, revocation and alteration, grounds for contest, limits on property owner's power to control, intestate succession. *Second half:* dispositive provisions, common questions of construction, future interests problems, administration of estates and trusts, charitable trusts. Prerequisite to Law 325: Law 210 or 211; to Law 326: Law 325. (Academic year—day and evening; summer 1969—Law 325)

327 Property II (2)

Schiller, J. Brown

Advanced problems in conveyancing: private control of land use—easements, covenants, equitable servitudes; planning and zoning—the forms of zoning, appraising the purposes of zoning ordinances, municipal authority to zone against the will of other governments, due process in zoning matters, nonconforming uses. (Spring—day and evening)

329 Unfair Trade Practices (3)

Weston, Banzhaf

Unfair trade practices at common law and under statutes; trademarks, trade names; copyright law; misappropriation of ideas; protection of competitors and consumers against false advertising under Federal Trade Commission Act; resale price maintenance under state Fair Trade Acts; state sales-below-cost statutes; Robinson-Patman Price Discrimination Act; miscellaneous business practices. (Fall—day and evening)

330 Federal Antitrust Laws (3)**Weston, Kirkpatrick**

Sherman and Clayton Acts, related statutes. Price fixing agreements and other types of trade restraints considered under Section 1; monopolizing considered under Section 2 of the Sherman Act. Mergers and tie-in sales; other activities under the Clayton Act. All types of business conduct raising questions under the antitrust laws, including trade association activities exclusive-dealing arrangements, boycotts, patents and copyrights. (Spring—day and evening; summer 1969)

332 Federal Jurisdiction (2)**Sharpe, Barron, Albert**

Relationship of federal courts to Congress and to the states, through analysis of cases dealing with federal judicial functions (including problems of advisory opinions, standing to litigate, justiciability), federal questions in federal courts, federal review of state court decisions (including relation between state and federal substantive law, procedural problems in exercising review, application of law to fact). (Fall—day and evening; summer 1969)

334 Advanced Criminal Procedure (2)**Starrs, Robinson**

Decision to arrest, prosecutive discretion, bail, the preliminary hearing, right to a speedy trial, discovery, plea bargaining, publicity, post-conviction procedures. (Fall—day and evening)

335 Jurisprudence (2)**Mayo, Kramer**

Basic jurisprudential concepts; nature of law; development of legal institutions; jurisprudential schools—natural law, analytical, historical, sociological, functional; law and logic; law and justice; the judicial process; legislative, executive, administrative decision making; impact of politics, economics, and scientific advance on legal systems, contemporary trends in jurisprudential thought. (Fall—evening; spring—day)

336 Taxation—Federal Income (3)**Weaver, Hambrick**

Survey of substantive provisions of federal income tax, including concept of gross income, provisions affecting taxation of family and individual transactions, limitations on allowable deductions, sales and dispositions of property, problems of capital gains taxation, nontaxable exchanges. (Fall—day and evening; summer 1969)

337 Taxation—Corporate (2)**Tannenwald**

Analytical study of income tax problems in corporate dividends and distributions in redemption of stock; corporate liquidations; reorganizations, mergers, acquisitions; recapitalizations; organization and sales of corporate businesses; collapsible corporations; carry-overs. Students cannot receive credit for both Law 337 and 340. Prerequisite: Law 336. (Spring—evening)

338 Taxation—Federal Estate and Gift (2)**Kramer, Hambrick**

Survey of substantive provisions of federal estate and gift tax laws, including inter vivos transfers, transfers in contemplation of death, joint interests, life insurance proceeds, property subject to powers of appointment, marital deduction and split gifts; tax procedure. (Fall—day and evening)

339 Collective Bargaining and Labor Arbitration (2)**Merrifield, Rothschild**

Collective labor agreement: content, negotiation, administration through grievance procedure and arbitration; problems in settlement of labor disputes. (Fall—evening; spring—day)

340 Taxation—Federal Income, Corporations and Shareholders (3)

Hambrick

Continuation of Law 336. Primary emphasis on corporate-shareholder relationships. Problems of corporate dividends, redemptions of stock, distributions in partial and complete liquidation, stock dividends, bail-outs, and dividends in kind closely analyzed. Federal income tax problems involved in the formation of corporations, the sale of corporate businesses (including collapsible corporations), mergers and acquisitions, and corporate divisions. Students cannot receive credit for both Law 340 and 337. Prerequisite: Law 336. (Spring—day)

341 Labor Law (3)

Merrifield, Albert, Rothschild

Law governing labor-management relations, organizations and representation of employees, regulation of economic weapons, enforcement of collective bargaining agreements, interunion and intraunion relations. (Fall—day; spring—evening; summer 1969)

344 Legal Writing (1 or 2)

Staff

Preparation of a research paper under the supervision of a member of the Faculty who will determine, prior to registration, whether the work required for the topic selected justifies one or two credits. If elected for one credit this course may be repeated to meet the legal writing requirement for the degree. Approval of the Dean is required prior to registration. (RP) (Fall and spring—as arranged)

346 Credit Activities (1 or 2)

Staff

Work done in connection with the Legal Aid Bureau, the Law Students Civil Rights Research Council, the International Law Journal, or the Moot Court Competition; under the supervision of the faculty adviser, who will determine, prior to registration, whether the work required justifies one or two semester hours of credit. The grade CR (credit) or NC (no credit) is given for this course. (Fall and spring—as arranged)

347 Insurance (2)

Schiller, Pock

A primary risk distributing medium and the rules by which legislative, administrative, judicial bodies seek to promote its benefits and avert its dangers. Includes insurance marketing, insurable interest, subrogation, transfer of insurance benefits to nonpolicyholders, coverage and other insurance policy provisions, disposition of claims. (Fall—day and evening; summer 1969)

348 Domestic Relations (2)

Seidelson, Potts, Clingan, Ferster

Marriage, annulment, and divorce; adoption and custody of children; economic relations. (Spring—day and evening; summer 1969)

349 Local Government Law (2)

Nutting, Pock

Decision-making processes in metropolitan and local communities; types and objectives of city, county, special function local government units; intergovernmental relations, original organization and changes, personnel; local lawmaking; responsibility in tort, introduction to community planning. (Fall—evening; spring—day, summer 1969)

351 Law and Accounting (2)

Cibinic

Study of fundamental accounting principles with emphasis on corporation accounting; legal and accounting implications of specific items in financial statements of corporations; inventory adjustments; corporate transactions; distributions, capital adjustments. Strongly recommended for students who have had no accounting. (Fall—evening; spring—day)

355 Government Contracts (2)

Cibinic

Survey of basic law underlying government procurement, basic power and limitations on Federal Government in entering into contracts, administrative and legislative policies governing these contracts, advertised and negotiated procurement procedures, forms of contracts and clauses used. Law 431 *Government Procurement Law* is the substantial equivalent of this course. (Fall—day)

358 Intellectual Property (2)

Kayton

Survey of the legal fundamentals of intellectual property rights in patents, copyrights, and technical trade secrets. Emphasis on comparing and contrasting the aforementioned disciplines for protecting intellectual property. The course is designed to permit an informed estimate of whether the law of intellectual property is applicable to given problem situations, and particularly to determine which of the patent, copyright, and trade secret disciplines may be operative effectively. This course provides sufficient background for taking more advanced courses in patent, copyright, and unfair trade practices. It is recommended that Law 329 be taken prior to or concurrent with Law 358. (Spring—day)

359 Patent Law (3)

Kayton

Law of patents subsequent to issuance of patent; nature of patent as property and as a legal instrument; validity—novelty, nonobviousness, commercial success; infringement—direct and contributory, doctrine of equivalents and file-wrapper estoppel. Substantive concepts introduced in an order approximating patentee's and infringer's cases in litigation. Designed for students intending to specialize in patent law; knowledge or experience in patent law helpful but not prerequisite. Prerequisite or equivalent in professional experience: Law 358. (Fall—evening)

362 Patent Office Practice (2)

Kayton

Substantive and procedural law of patents leading to issuance of patent, mainly related to proceedings before U.S. Patent Office. Obtaining and preserving earliest possible patent filing date; continuing applications, res judicata, novelty and nonobviousness requirements; substantive rules of priority of invention and related affidavit practice; nature of claims and formal defects; restriction and double patenting. Designed for students intending to specialize in patent law. Prerequisite: Law 359 or the equivalent in experience. (Spring—evening)

365 Patent Trial and Appellate Practice (2)

T. Brown

Practice before U.S. Court of Customs and Patent Appeals and federal courts. Credit is not given to students who have credit for Law 385. Prerequisite: Law 359, 362, and forty-two additional hours of Law. Prerequisite or concurrent registration: Law 218 and 232. The grade CR (credit) or NC (no credit) is given for this course. (Fall and spring—evening)

366 Patent Trial and Appellate Practice (2)

T. Brown

Prerequisite: Law 365 or 385. The grade CR (credit) or NC (no credit) is given for this course. (Fall and spring—evening)

372 Administrative Law (3)

Miller, Park, Banzhaf

(Formerly Law 234)

Study of the administrative process in executive and independent regulatory agencies; emphasis on judicial review. Formal and informal decision making, investigation, planning, and public administration functions of

the agencies as related to their legal limits and to the roles of lawyers in government and private practice. Relationships of agencies to the executive and legislative branches, to public and private interest groups, and to the social, political, and economic aspects of various philosophies of government regulation. (Spring—day and evening; summer 1969—offered as Law 234)

374 Equity (2)

Nutting, Pock, Banzhaf

Nature of equity jurisprudence through analysis of selected problems in equity; historical development of equity, including problems of merger of law and equity; use of equity jurisdiction offensively and defensively, including multi-party actions, injunction of executive and legal actions, equitable abstention; emphasis on fashioning of equitable remedies. (Spring—day and evening; summer 1969)

376 Restitution (2)

Nash, Sharpe

Quasi-contracts, constructive trusts, rescission, and other legal and equitable remedies for restoring property and money which unjustly enrich others at the expense of volunteers, victims of misappropriation, and parties to mistaken contracts. (Spring—day and evening)

377 Legislation (2)

Nutting

Legislative process and roles of participants in the process; operation of United States Congress and state legislatures, including fact finding, organization, procedure. Statutory interpretation emphasized to provide foundation for more advanced courses. (Fall—day and evening; summer 1969)

378 Suretyship and Mortgages (3)

Clingan

Security interests in real property, their creation, transfer, enforcement, and extinguishment; the law of suretyship, especially in the context of accommodation credit, and the relationship of suretyship contracts and negotiable instruments. Creation of the surety relation, rights and duties of the parties, defenses and discharge of the surety. (Spring—day)

385 Trial Practice Court (2)

Jackson, Edgerton, Herrick, Ryan,
Beard, Kendrick, Skinker, Clingan, Stevas

Trial of assigned cases, trial tactics and techniques, pre-trial and courtroom procedures pursuant to Federal Rules. Credit is not given to students who have credit for Law 365. Prerequisite: forty-two semester hours, including Law 218. Prerequisite or concurrent registration: Law 232. The grade *CR* (credit) or *NC* (no credit) is given for this course (Fall and spring—day and evening)

386 Trial Practice Court (2)

Jackson, Edgerton, Herrick, Ryan,
Beard, Kendrick, Skinker, Clingan, Stevas

Prerequisite: Law 385 or 365. The grade *CR* (credit) or *NC* (no credit) is given for this course. (Fall and spring—day and evening)

388 Appellate Practice and Procedure (2)

Freedman

Students participate in preparing an actual criminal case on appeal, starting with review of trial transcript and culminating with preparation of brief and oral argument before U.S. Court of Appeals for the District of Columbia Circuit or the U.S. Supreme Court. Appellate practice and procedure studied through texts; consultation with appellate judges, law clerks, and attorneys with cases pending on appeal; observation of argu-

ments in the Supreme Court and the Court of Appeals. Admission by permission of the instructor. (Not offered 1969-70)

390 Forensic Medicine (2)
(Formerly Law 595)

Sharpe, Head

A survey of interprofessional relations between physicians and lawyers in the office, the hospital, and the courtroom, with incidental attention to laboratories, legislatures, and administrative agencies. Undergraduate law students and third-year medical students study how their professions accommodate conflicts between economics and ideals, and how they exercise judgment in applying their technical skills. (Fall—day and evening)

391 United Nations Law and World Order (2)

Mallison

Introduction to international law through study of law and practice of United Nations Charter; structure and process of decision of United Nations; maintenance of international peace and security—peaceful settlement of disputes and national and collective self-defense; formulation and implementation of human rights. Complements but does not repeat the material in Law 303. (Spring—day and evening)

ADVANCED COURSES

ADMINISTRATIVE LAW: ECONOMIC REGULATION

402 Executive Function (2)

Miller

Executive branch in constitutional theory; major trends in development of Executive-Administrative function; organization of Executive branch; relationship of Executive to Congress and Judiciary; policy-making procedures within Executive branch including role of Bureau of the Budget in national policy planning; case studies in exercise of Executive power in such functional areas as national defense, race relations, national economy, foreign economic relations; role of law and lawyers in Executive decisional and implemental process. (RP) (Fall—evening)

403 Public Economic Policy and the Law (2)

Stark

(Formerly Economic Planning and the Law)
Interrelation of law and economics in such subject matter categories and decisional contexts as antitrust laws, economic regulation of industry, fiscal policy planning, government research and development practices, land use planning, and foreign trade and investment. (RP) (Fall—evening)

404 Securities Regulation (2)

H. Green

State and federal laws governing offering and distribution of securities to the public by corporate issuers and others, regulation of securities markets, rights and liabilities of purchasers under such statutes. Emphasis on statutes administered by Securities and Exchange Commission. (Fall—day and evening)

405 Regulation of Securities Markets (2)

Rotberg

Operation of over-the-counter and exchange markets, including competitive and monopolistic practices in each market; relationship of antitrust laws and securities regulations to concept of a free and open market place; role of regional exchanges and third market in providing competi-

- 329 *Unfair Trade Practices*
- 330 *Federal Antitrust Laws*
- 372 *Administrative Law*

OTHER RELATED COURSES

- 451 *Federal Programs for Urban Poverty*
- 493 *Intergovernmental Aspects of Technological Change*
- 494 *Use and Control of Atomic Energy and Space Technology*
- 505 *Intergovernmental Relations I*
- 506 *Intergovernmental Relations II*
- 571 *Land Use Planning*

CORPORATION LAW

422 *The Modern Corporation (2)*

Miller

Analysis of the nature and role of the large business corporation in the American political economy; models of the corporation: the transnational or multinational enterprise; the concept of accountability as applied to corporate activities; reasons for the growth of large corporate enterprise; relationships of the "supercorporations" to other centers of decentralized power and to the government; the corporation as the basic planning unit of the American economy; application of the Constitution to the corporation. (RP) (Fall—day)

424 *Business Planning (2)*

H. Green, Carlson, S. Cohen

Integrated study of corporate, financial, tax, accounting, and SEC aspects of the following: organization of a small corporation; organization of a public corporation; stock dividends, recapitalization, and stock repurchases in the context of conflict between active stockholders of a close corporation and the family of a deceased active stockholder; corporate liquidations; corporate mergers and acquisitions; and divisions of corporations. Prerequisite: Law 312 and 351. (Fall—day; spring—evening; summer 1969)

427 *Legal Aspects of International Business Transactions (2)*

Nurick, Guttentag

U.S. law and practice, including current antitrust and tax problems, brief comparison with British and Civil Law systems; international law, foreign contracts, choice of law; currency considerations; effect of SEC laws and regulations; international trade, including GATT and reciprocal trade arrangements; sources of finance, both United States and foreign, private and public, including international organizations, and selected case studies. In addition to the regular lecturers, there will be guest lecturers in their specialties. Prerequisite: Law 303. (Spring—evening)

Master of Laws candidates in the area of Corporation Law who have not taken the following courses or their equivalent as part of a Juris Doctor or Bachelor of Laws program should include them in their Master's program.

- 312 *Business Associations II*
- 313 *Sales and Sales Financing*
- 329 *Unfair Trade Practices*
- 330 *Federal Antitrust Laws*

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- 372 *Administrative Law*

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CORPORATION LAW

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Nurick, Guttentag

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- 313 *Sales and Sales Financing*
- 329 *Unfair Trade Practices*
- 330 *Federal Antitrust Laws*

337 *Taxation—Corporate*

or

340 *Taxation—Federal Income, Corporations and Shareholders*

OTHER RELATED COURSES

431 *Government Procurement Law*

540 *Comparative Conflict of Laws and Transnational Problems*

541 *European Common Market*

555 *Taxation—Special Corporation Problems*

562 *Income Taxation of Foreign Business and Investment*

GOVERNMENT PROCUREMENT LAW

431 *Government Procurement Law (2)*

McIntire

Survey of the law pertaining to government procurement, including an analysis of the unique features of government contracting and a discussion of the functions of Congress, the Executive branch, and the Courts in the procurement process. Law 355 *Government Contracts* is the substantial equivalent of this course. (Fall—evening)

432 *Formation of Government Contracts (2)*

McIntire

Detailed coverage of the rules and practices followed in arriving at contracts between the Government and private parties. Comparison in depth of advertised and negotiated procurement and analysis of the techniques used in pricing and arriving at the terms of such contracts. (Spring—evening)

433 *Performance of Government Contracts (2)*

Nash, Cibinic

Discussion of the substantive legal problems that most frequently arise during the performance of government contracts. Interpretation of specifications and the most generally used contract clauses, and analysis of the rights of the parties when performance in accordance with the terms of the contract is not obtained. (Spring—evening)

434 *Government Contract Claims and Litigation (2)*

Ginsburg

Analysis of the methods which can be used by the parties to a government contract to obtain legal relief, including detailed coverage of the disputes procedure, actions for breach of contract, and forms of equitable and extraordinary relief. (Fall—evening)

435 *Seminar: Government Contracts (2)*

Nash, Cibinic, Ginsburg

Research and discussion of selected problem areas. (RP) (Summer 1969)

OTHER RELATED COURSES

402 *Executive Function*

424 *Business Planning*

427 *Legal Aspects of International Business Transactions*

442 *Labor Standards Legislation*

494 *Use and Control of Atomic Energy and Space Technology*

495 *Legal Protection against Technological Hazards*

505 *Intergovernmental Relations I*

506 Intergovernmental Relations II**535 Negotiation: Concepts and Techniques****LABOR LAW****441 Seminar: Disability and Retirement Problems (2)** Doherty

Study of selected problems under workmen's compensation; old age, survivors, and disability insurance; medicare; and private welfare and pension plans. (Fall—evening)

442 Labor Standards Legislation (2) Ginsburg

Analysis of the Fair Labor Standards Act, its scope and exemptions, employee working conditions and safety requirements; the laws establishing labor standards for Government contracts, including the Davis-Bacon Act, Walsh-Healey Act, Service Contract Act, and Work Hours Act; the role of the Department of Labor, the Comptroller General, and the contracting agencies in interpretation, administration, and enforcement of these statutes. (Spring—evening)

443 Labor Relations in the Federal Service (2) Holland

Detailed study of labor relations in the federal service. Particular attention to current problems arising from the President's Task Force Report and the Executive Order of January 17, 1962, creating a new system of collective relationships between employee organizations and the Federal Government. (RP) (Fall—evening)

444 Labor Unions and Their Members (2) Bartosic

Study of the legal relations between unions and their members with special emphasis on the right to fair representation, the right to union membership, compulsory union membership, the imposition of discipline upon union members, reporting requirements, the conduct of internal union elections, the fiduciary duties of union officers, the imposition of trusteeships, the regulation of racketeering, and political action of unions. (Summer 1969)

447 Seminar: Labor Law (2) Merrifield

Group study of contemporary problems in labor law. (RP) (Spring—evening)

449-50 Seminar: Labor Litigation (1-1) Bartosic

Intensive study of recent Supreme Court and appellate court decisions in the area of labor law; special emphasis on the contrasting variables which influence the respective decision-making processes of the National Labor Relations Board and the courts. Particular attention to labor law cases pending before the Supreme Court for decision during the current term. Analyses of the briefs filed in pending cases; attendance at oral argument; post mortems of the arguments and decisions, with classroom participation by attorneys involved in some cases. Grades and credit for both halves of the course assigned only on completion of the second half. (Academic year: every other week—evening)

Master of Laws candidates in the area of Labor Law who have not taken the following courses or their equivalent as part of a Juris Doctor or Bachelor of Laws program should include them in their Master's program.

- 339 *Collective Bargaining and Labor Arbitration*
341 *Labor Law*

OTHER RELATED COURSES

- 459 *Problems of the Consumer*
460 *Current Problems in Civil Rights*
461 *Social Welfare Legislation and Administration*

LAW AND POVERTY

451 **Federal Programs for Urban Poverty (2)**

Cahn

Study of the legislative and administrative process by which particular urban problems are converted into a grant of statutory authority, an operating program, and finally a funded project in a given city. Areas considered will be employment and job training programs such as USES and vocational education programs, the Manpower Development and Training Act, Job Corps, and Neighborhood Youth Corps, elementary and secondary education programs such as Titles I and III of the Elementary and Secondary Act; and the Community Action and Model Cities programs (Fall—day; summer 1969)

453 **Community Organizations (2)**

Cahn

Analysis of past efforts to create community organizations in areas of poverty, alternative forms of organization, including cooperatives, unincorporated associations, and nonprofit corporations, and the advantages and disadvantages of each; functional organizations such as community councils, tenant unions, consumer cooperatives, and credit unions, community participation in Model Cities and OEO programs; problems relating to community action, such as the status of boycotts under antitrust and common law, the Constitutional protection afforded to demonstrations, and limitations imposed on community action supported by public funds. (Fall—day)

458 **Housing the Poor (2)**

Starts

Survey of the private and public law of urban housing; the economics of urban housing and slum ownership; the current assault on traditional concepts of landlord-tenant law: the lease as contract or conveyance, implied warranties and dependent covenants, constructive eviction, adhesion contracts, and retaliatory eviction; government intervention in the landlord-tenant relationship—housing codes and their enforcement, rent withholding and receivership statutes, and statutory leases; government programs designed to increasing the urban housing supply—FHA-guaranteed mortgages, "turnkey" and rent supplements, urban renewal and relocation. (Spring—day)

459 **Problems of the Consumer (2)**

Rothschild

Analysis of installment buying among the urban poor: applicability of usury statutes to noninterest "charges"; legal attacks upon the "time-price" concept; assertion of defenses against finance companies as assignees and holders in due course; waiver of defenses, default and confession judgments, and the cognovit note; "adhesion contracts," "unconscionability," and other recognition of the unequal bargaining relationship; problems relating to repossession, sale, and resale. Bankruptcy and Chapter XIII wage-earner plans as remedies for the urban consumer with overextended

credit; noncredit problems of the urban consumer—price discrimination, remedies against deceptive practices, problems relating to breach of warranty, and proposed legislation such as the Uniform Consumer Credit Code. (RP) (Spring—day)

460 Current Problems in Civil Rights (2)

Kuhn

Primary focus on legal problems of racial discrimination in housing, education, and employment through an evaluation of the work done in these areas by the Department of Justice; the Equal Employment Opportunity Commission; the Department of Health, Education, and Welfare; and the National Labor Relations Board. Some consideration of parallel state experience and accommodation with the federal scheme. (Spring—day)

461 Social Welfare Legislation and Administration (2)

Study of public assistance, social insurance, and medical and legal assistance programs; the socioeconomic status of welfare recipients, the psychological impact of the welfare system, and the "Welfare Rights Movement"; particular legal issues, such as "midnight searches" and the Fourth Amendment, imposition of support obligations on non-fathers through the "Man-in-the-House Rule," imposition of moral behavior standards through welfare denial, right of privacy, and Constitutional issues raised by mandatory training or work requirements. (RP) (Spring—day)

462 Family Law of the Poor (2)

Consideration of the full range of problems associated with family formation and dissolution among the urban poor and the problems of urban children and their parents: the law of marriage, annulment, divorce, and separation as it affects the poor urban family unit; impact on the family of welfare and public housing eligibility regulations; legal problems associated with common-law marriage, illegitimacy, and meretricious relationships; scope of support obligations and sanctions imposed through welfare denial or eviction from public housing; organization of social services and their role in the solution of family problems; and the lawyer's role in family counseling. (RP) (Not offered 1969-70)

OTHER RELATED COURSES

441 *Seminar: Disability and Retirement Problems*

472 *Administration of Criminal Justice*

475 *Law and Criminology I: Search for the Causes of Criminal Behavior*

476 *Law and Criminology II: Society's Responses to the Criminal Offender*

477 *The Police and the Community*

560 *Taxation—State and Local*

571 *Land Use Planning*

592 *Seminar: Constitutional Law*

LAW, PSYCHIATRY, AND CRIMINOLOGY

472 Administration of Criminal Justice (2)

Allen

Consideration and analysis of selected advanced problems in the administration of criminal justice. The subject matter covered will vary from year to year, with concentration in areas of current interest and dynamic change (e.g., right to counsel, arrest and interrogation, search and seizure, prejudicial publicity, discovery, electronic interception, mental impair-

ment). Emphasis will be placed on the role and professional responsibilities of prosecutor and defense counsel and on developmental trends in the law. (Spring—day)

475 Law and Criminology I: Search for the Causes of Criminal Behavior (2)

Courtless

Role which criminological knowledge of crime causation may play in assisting lawyers to appraise the effectiveness of various alternative social and legal devices in controlling deviant behavior. The search for factors related to criminal behavior will be developed historically, with emphasis on current causal theories developed by various disciplines. Model as well as operational penal codes, sentencing and probation practices, and specialized facilities will be analyzed in terms of their relationship to such causal theories. (RP) (Fall—evening)

476 Law and Criminology II: Society's Responses to the Criminal Offender (2)

Courtless

Study of the development and current use of society's three major approaches to the handling of offenders: punitive, mechanical, and correctional. Emphasis on society's changing responses to criminal and delinquent behavior, and research findings concerning effectiveness of these responses. Analysis of treatment strategies to facilitate communication between members of the legal profession and behavior scientists charged with effectuating these strategies. (RP) (Spring—evening)

477 The Police and the Community (2)

Cahn, Allen, Courtless

Analysis of the variety, prevalence, and causes of urban crime: structure of police forces and proposals for improvement; exercise of discretion, abuse, or "brutality" at the time of arrest; problems of police-community relations and the role of review boards; crimes of the urban poor (such as vagrancy, "failure to move on," and public drunkenness) and their relationship to more serious criminal activity; the poor as victims of crime and efforts to protect them other than by police activity (e.g., compensation for victims of crime, and crime prevention through minimization of opportunity). (Spring—day)

478 Post-conviction Dispositions—Dynamics of the Law of Criminal Corrections (2)

Barkin

Study of the statutes, practice, problems, and potentials of the alternatives facing a defendant including: mental fitness to proceed to trial, probation, sentencing, parole, correctional institutions, rights of prisoners. (Fall—evening)

486 Seminar: Law and Psychiatry (2)

Allen

Designed to (1) expose the lawyer to some of the constructs of dynamic psychiatry dealing with human personality and behavior, and to relate them to problems encountered in legal practice; (2) provide information—both psychiatric and legal—bearing upon such topics as mental illness and tort liability ("traumatic neurosis," malpractice, commission of torts by mentally ill persons); hospitalization of the mentally ill and mentally retarded, guardianship; ad hoc determinations of incompetency (testamentary, contractual, and donative capacity; capacity to marry, have custody of children; mental illness as a ground for divorce; eugenic sterilization); mental illness and the criminal law (psychiatric evaluations in criminal cases, determinations of competency to stand trial, criminal responsibility);

and (3) examine the role of psychiatry in legal settings, including the effective use of the psychiatrist and psychologist as expert witness. (RP—fall semester only) (Fall—day; summer 1969)

- 487 **Interdisciplinary Seminar on the Juvenile Court (2)** Ferster
Sociological, psychological, and psychiatric views on prevention, diagnosis, and treatment; analysis of statutes, court rules, and reported cases pertaining to delinquency, dependency, custody, and child abuse; emphasis on the role of the lawyer in this court. (RP) (Fall—evening)

OTHER RELATED COURSES

- 390 *Forensic Medicine*
591 *Legislative Drafting*
592 *Seminar: Constitutional Law*
594 *Negligence Trial Techniques*

LAW, SCIENCE, AND TECHNOLOGY

- 491 **Science Policy Formulation (2)** H. Green
Current or recent important governmental decisions in the area of science as they affect the interplay of various government and community interests; the role of law as a constraint, vehicle, or implement; the role of lawyers in the decision-making process. (RP) (Not offered 1969-70)
- 492 **Seminar: Science and the Legal Process (2)** H. Green
Reciprocal relationships between law and science; absorption of scientific concepts into substantive law through adjudication, legislation, and rule making; techniques and procedures used in handling, developing, and deciding scientific issues (RP) (Spring—evening)
- 493 **Intergovernmental Aspects of Technological Change (2)** Oppenheimer
Role of technology in breaking down political barriers and leading to intergovernmental measures to control or advance technological progress within the United States and on an international basis. Specific legal devices and institutions employed in intergovernmental handling of technological problems. (RP) (Not offered 1969-70)
- 494 **Use and Control of Atomic Energy and Space Technology (2)** H. Green
Problems resulting from revolutionary scientific developments of recent years. Impact of advanced technologies on the law and legal institutions. Laws and regulations relating to atomic energy and space including civilian uses, licensing, security, international, and patent considerations. (RP) (Fall—evening)
- 495 **Legal Protection against Technological Hazards (2)** Dembling, J. Brown
The growth and development of law and legal institutions to protect society against the hazards inherent in new technologies with particular emphasis on the progress of reconciling the protection of the public with the desire for rapid progress. (RP) (Spring—day and evening)

OTHER RELATED COURSES

- 402 *Executive Function*
- 412 *Food and Drug Law*
- 413 *Public Policy and Mass Media*
- 431 *Government Procurement Law*
- 503 *Natural Resources Law and Policy*
- 505 *Intergovernmental Relations I*
- 531 *International Law of Air and Space*
- 532 *International Law of the Sea*

NATURAL RESOURCES LAW

501 *Land Development Law* (3)

J. Brown

Study of the various techniques relative to land development; the status of the Federal Government as landlord, vendor, and purchaser; the competitive private market as a form of planning in comparison to governmental planning programs; the functions of the lawyer in the modern real estate transaction involving land acquisition, licenses, codes and permits, development, construction, sale, and financing. Consideration of new forms and concepts of ownership, transportation programs as a part of land development planning, the migration of people and industry as a planning and control factor, and private and public "new town" developments. (RP) (Fall—day; summer 1969)

502 *Water Resources Law* (3)

Maloney

Introductory survey course in the law relating to water resources. The history and development of water rights systems in the United States, with comparative analysis of Eastern and Western water law, including trends toward modification of traditional doctrines; description of private and public rights to both consumptive and nonconsumptive uses; exploration of rights in land adjacent to water courses; identification of federal-state-local relationships, conflicts, and institutions; consideration of inter-basin domestic and international transfers; creation of new sources through desalination, weather management, and ground storage programs. (Summer 1969)

503 *Natural Resources Law and Policy* (2)

Kratchman

Study of key legal doctrines and their development in the law of water, mining, and oil. Systematic analysis of natural resource problems such as government and private interactions, multiple use and priorities of resources, and security of property rights. Examination of alternatives in resource policy development, and impact on private and public actions. (RP) (Fall—evening)

504 *Formulation of Natural Resources Policy* (2)

Kiechel

Study of the way natural resources policy has been formulated; emphasis on engineering considerations, political aspects, and the social and economic forces bearing on this problem. Extensive consideration of the ongoing legislative process at the federal level; detailed examination of a number of actual problem areas, including Appalachia, the estuaries, watershed transferrals, demonstration cities, etc. (RP) (Spring—evening)

505 *Intergovernmental Relations I* (2)

Nash

Study of the constitutional powers and limitations of federal, state, and local governments in the United States in the light of current problems of

governmental control; the federal system and the resultant municipal-state-federal allocation of authority and responsibility; the federal taxing, spending, proprietary public welfare, and treaty-making powers as related to intergovernmental programs and projects. (Fall—day)

506 Intergovernmental Relations II (2)

J. Brown

Each student will make a case study of a current program which has been forced to deal with the problem of multi-government involvement, such as river basin development programs, metropolitan programs in transportation or sanitation, or other federal-state or federal-foreign government programs. (RP) (Spring—day)

OTHER RELATED COURSES

403 *Public Economic Policy and the Law*

431 *Government Procurement Law*

491 *Science Policy Formulation*

492 *Seminar: Science and the Legal Process*

495 *Legal Protection against Technological Hazards*

532 *International Law of the Sea*

560 *Taxation—State and Local*

571 *Land Use Planning*

591 *Legislative Drafting*

PATENT AND TRADE REGULATION LAW

523 Court Review of Patent Office Decisions (2)

Dunner

Procedure and procedural law involved in appealing to the U.S. Court of Customs and Patent Appeals and the U.S. District Courts from administrative decision in the U.S. Patent Office. Designed to provide an exhaustive step-by-step procedural progression through *ex parte* and *inter partes* appeals. Emphasis on the forms used in the many motions and proceedings before the Court of Customs and Patent Appeals and the District Courts required to perfect an appeal. Introductory material will include administrative appeals before the U.S. Patent Office Board of Appeals. Special extraordinary review in the U.S. District Courts and under the Administrative Procedure Act. Prerequisite: Law 359, 362; or the equivalent in experience. (Fall—evening)

525 Copyright Law (2)

Cary

Historical background; formalities and essentials in securing a copyright; subject matter of copyright; remedies; international aspects of copyright under Berne Union, Universal Copyright Convention, Inter-American Convention; copyright licensing and performing right societies. (Spring—evening)

527 Advanced Topics in Patent Law (2)

Harris

Licensing and protection of industrial property; uses and abuses of patents; governmental regulation; protection abroad; role of patents in business; economic and social functions of patents, trademarks, and copyrights. Prerequisite: Law 359. (RP) (Spring—evening)

529 Research in Patent, Trademark, and Copyright Law (2)

Harris

Prerequisite: Law 417, 527, and related courses; and a B average. Request in writing, with proposed outline of topic of research, must be submitted

to the Dean at least one month prior to registration day. Work must be completed within the semester and paper submitted not later than last day of classes. Graduate students may repeat this course once for credit with the approval of the Dean. (RP) (Fall and spring—as arranged)

Master of Laws candidates in the area of Patent and Trade Regulation Law who have not taken the following courses or their equivalent as part of a Juris Doctor or Bachelor of Laws program should include them in their Master's program.

- 329 *Unfair Trade Practices*
- 330 *Federal Antitrust Laws*
- 359 *Patent Law*
- 362 *Patent Office Practice*
- 365 *Patent Trial and Appellate Practice*

OTHER RELATED COURSES

- 412 *Food and Drug Law*
- 417 *Seminar: Trade Regulation*
- 427 *Legal Aspects of International Business Transactions*
- 431 *Government Procurement Law*
- 491 *Science Policy Formulation*
- 492 *Seminar: Science and the Legal Process*
- 493 *Intergovernmental Aspects of Technological Change*
- 541 *European Common Market*
- 562 *Income Taxation of Foreign Business and Investment*

PUBLIC INTERNATIONAL AND COMPARATIVE LAW

531 *International Law of Air and Space (2)*

Study of the development of international law relating to the use of air space and outer space; the role of various intergovernmental and nongovernmental international organizations; consideration of special problems of liability resulting from space activities, space technology and arms control, and pollution and contamination of outer space. (RP) (Fall—evening)

Dembling

532 *International Law of the Sea (2)*

International and domestic law affecting the allocation of authority over ocean space. Problems concerning internal waters, territorial seas, the high seas, contiguous zones, and the continental shelf; the impact of advances in ocean science technology on ocean resource law; freedom of the sea, maritime safety, and related subjects. This course is given in seminar format, and research papers are preferred; however, an end-of-course examination will be approved under special circumstances. (RP) (Fall—evening)

Clingan

533 *Legal Regulation of International Coercion (2)*

Process of legal decision in war and when expectations of violence are high—contemporary international law of war and coercive measures short of war such as limited naval blockade; legal aspects of modern methods of coercion—economic, political, psychological, and military; limited war

Mallison

and modes of preventing "escalation" to total war; regulation of hostilities, problems concerning atomic, bacteriological, and chemical weapons. (RP) (Fall—evening)

534 Legal Aspects of American Foreign Relations (2) Miller

Legal and policy questions involved in the conduct of American foreign relations. Emphasis upon participation in such multinational organizations as the International Labor Organization, the Organization of American States, the Organization for Economic Cooperation and Development, and the North Atlantic Treaty Organization. Some attention to export controls, international measures for arms control, the American constitutional structure for the conduct of foreign affairs, and the role of law in foreign relations. Prerequisite: Law 212. (RP) (Not offered 1969-70)

535 Negotiation: Concepts and Techniques (2) Ramundo, Frank

Role of the lawyer and policy maker (client) in private, intragovernmental, and international negotiations; negotiations in private practice and governmental operations; achieving consensus among contentious parties; negotiating techniques, including effective use of the "fallback"; gaming exercises in the actual conducting of negotiations with practical work in the preparation of claim letters, agency and national positions, and negotiating instructions. (RP) (Spring—evening)

536 Diplomatic and Consular Law and Practice (1) Mitchell

Development of diplomatic and consular relations between nations; legal rights, privileges, functions, and immunities of diplomatic and consular personnel; extent of immunity from jurisdiction of foreign government missions and representatives; problems of taxation affecting foreign government missions and personnel. (Spring—evening)

540 Comparative Conflict of Laws and Transnational Problems (2) Delaume

Examination of jurisdictional problems including adjudicatory jurisdiction, recognition and enforcement of foreign and international judgments and awards, and international cooperation in litigation. Emphasis on choice of law problems involving transnational families (domestic relations and property relations), transnational corporations and other entities, transnational controls, and transnational torts. Prerequisite: Law 309. (RP) (Spring—evening)

541 European Common Market (2) Ehrenhaft

Analysis of treaty establishing European Economic Community; institutions of EEC and of member states and the internal law of member states as they affect doing business in EEC; series of problems arising out of establishing and operating business with and within EEC. Background in international law and antitrust law desirable. (RP) (Fall—evening)

542 Seminar: International Technical and Economic Assistance (2) Aufrecht

Technical and economic assistance activities of the United States, the United Nations, and specialized agencies; problems of law, policy, program, and administration; development planning; public and private transactions and institutions involving technical or economic assistance. (RP) (Fall—evening)

546 Soviet Law (2)

Ramundo

Concept of "socialist legality"; legal relationship of individual to state and other participants in Soviet society; role of Party in Soviet legal system; Soviet philosophy of law; state (constitutional) law; Soviet federalism; governmental apparatus, rights and obligations of citizenship; criminal law; property law; labor law; selected topics in civil law and procedure; international law. (Fall—evening)

547 Chinese Law (2)

Hsia

Emphasis on the legal system of Communist China; analysis of the constitutional law of the People's Republic of China, including general principles, state structure, and rights and duties of citizens; a brief survey of the administration of justice—courts, procuratorates, and lawyers; marriage law; land law; counterrevolutionary act and other criminal statutes; principles of civil law; communist Chinese concept of international law. (RP) (Spring—evening)

548 Law of the Near East (2)

Liebesny

Law of the Arab countries, including basic principles of Islamic law; analysis of the present day codes, and investigation of the Western influences on laws of Arab countries. (Spring—evening)

Master of Laws candidates in the area of Public International and Comparative Law who have not taken the following courses or their equivalent as part of a Juris Doctor or Bachelor of Laws program should include them in their Master's program.

302 Admiralty

303 International Law and World Order

307 Comparative Law

309 Conflict of Laws

391 United Nations Law and World Order

OTHER RELATED COURSES

427 Legal Aspects of International Business Transactions

494 Use and Control of Atomic Energy and Space Technology

505 Intergovernmental Relations I

506 Intergovernmental Relations II

562 Income Taxation of Foreign Business and Investment

TAXATION**551 Taxation—Partnerships and Subchapter S (2)**

Clark

Income tax problems of partnerships and tax-option corporations (Sub-chapters K and S of the Internal Revenue Code of 1954). Prerequisite: Law 336. (Spring—evening)

553 Seminar: Estate Planning (2)

Speiller

Group study of the effective disposition of wealth, inter vivos and testamentary gifts, conservation for owner's future use, use of insurance, tax and administrative problems, business interests, pension and profit-sharing arrangements. Prerequisite: Law 338. (RP) (Spring—evening; summer 1969)

555 Taxation—Special Corporation Problems (2)

Schoeneman

Detailed study of the principal Federal tax benefits of the corporate form of doing business. Consideration of problems involved in the tax planning of the corporate structure and corporate operation, including the tax definition of a corporation, the special deductions available to corporate taxpayers, compensating the corporate executive and employee, the debt-equity question, the accumulated earnings tax, the personal holding company tax, multiple corporations, and consolidated returns. Survey of the types of corporations receiving special treatment under the Internal Revenue Code, such as financial institutions, the real estate investment trust, regulated investment companies, cooperatives, and the small business corporation. (RP) (Fall—evening)

556 Seminar: Foundations and Other Charitable Organizations (2)

Weaver

The special role of organized philanthropy. Legal problems peculiar to foundations and other charitable organizations viewed from the perspective of donors, organization officers, beneficiaries, and the public. (RP) (Not offered 1969-70)

557 Taxation—Exempt Organizations (2)

Treusch

Tax exempt organizations—policy and practice. Preferred tax treatment of selected organizations and of gifts to them. Statute and regulations vs. actual IRS practice: legislative origins, judicial interpretations, and policy considerations. Tests of qualification, disqualification, and limited tax preference. Mechanics of securing and retaining exemptions, qualified exemption, unrelated business income vs. investment income. Denial or loss of exemption: tax treatment of nonexempt, nonprofit organizations. Judicial and legislative treatment of losses of tax exempt status. Prerequisite: Law 336. (Fall—evening)

559 Taxation—Oil and Gas (2)

Hambrick

Application of federal income tax to producing segment of oil and gas industry. Classification of interests: treatment of exploration and development expenditures. Depletion allowance and concept of "economic interests." Sales and "ABC" transactions. Organization problems. Prerequisite: Law 336. (Not offered 1969-70)

560 Taxation—State and Local (2)

Schwartz

Taxation by state and local governments: property taxation problems, sales and use taxes, income taxation. Limitations on taxation of interstate commerce. Prerequisite: Law 336. (Spring—evening)

562 Income Taxation of Foreign Business and Investment (2)

Hambrick

The provisions and policies of the Federal Income Tax law applicable to foreign income, including considerations affecting the choice of methods of engaging in foreign business and investment, treatment of controlled foreign corporations, allocation of income in foreign commerce, credit for foreign taxes, principles and trends of U.S. tax treaties. (Spring—evening)

564 Seminar: Special Problems of Tax Policy (2)

Weaver, Ellicott

Intensive study of selected aspects of the tax structure with primary attention given to the federal income tax. Problem areas are reviewed primarily from the standpoint of tax policy, including legal, economic, social, and practical considerations. Alternative solutions, including current leg-

islative proposals, are examined. Prerequisite: Law 336, 337. (RP)
(Fall—evening; spring—day)

567 Seminar: Tax Practice and Procedure (2)

Elliott, Klayman

Review of the major areas of tax practice, including organization of the Internal Revenue Service, legislation, administrative regulations, tax planning, tax rulings, tax audit, settlement procedures, claims for refund, tax collection processes, criminal tax practice, and ethical problems in tax practice. Preparation of various documents is required. Prerequisite: Law 336. (RP) (Fall—evening)

568 Seminar: Federal Tax Litigation (2)

Treusch

Choice of forum. Conduct of civil tax cases: trial practice in the Tax Court, the District Courts, and the Court of Claims; appeal practice in the Courts of Appeals and on certiorari to the Supreme Court; analysis and drafting of pleadings, motions, and briefs; oral argument; settlements and stipulations of fact. Comparative responsibilities and procedures of IRS and of Justice for litigation control. Prerequisite: Law 567. (RP)
(Spring—evening)

Master of Laws candidates in the area of Taxation who have not taken the following courses or their equivalent as part of a Juris Doctor or Bachelor of Laws program should include them in their Master's program.

336 Taxation—Federal Income

or

340 Taxation—Federal Income, Corporations and Shareholders

337 Taxation—Corporate

338 Taxation—Federal Estate and Gift

351 Law and Accounting

OTHER RELATED COURSES

403 Public Economic Policy and the Law

404 Securities Regulation

424 Business Planning

427 Legal Aspects of International Business Transactions

URBAN LEGAL STUDIES

571 Land Use Planning (2)

Selected problems in urban redevelopment and housing, with particular emphasis on programs under current federal and state legislation. (RP)
(Spring—day)

Nutting

Descriptions for the other courses in this area (listed below) appear elsewhere in "Advanced Courses."

451 Federal Programs for Urban Poverty (2)

453 Community Organizations (2)

458 Housing the Poor (2)

459 Problems of the Consumer (2)

461 Social Welfare Legislation and Administration (2)

501 Land Development Law (3)

505 Intergovernmental Relations I (2)

506 Intergovernmental Relations II (2)

560 Taxation—State and Local (2)

Master of Laws candidates in the area of Urban Legal Studies who have not taken the following course or its equivalent as part of a Juris Doctor or Bachelor of Laws program should include it in their Master's program:

349 Local Government Law

OTHER RELATED COURSES

407 Seminar: Regulation of Transportation I

408 Seminar: Regulation of Transportation II

460 Current Problems in Civil Rights

462 Family Law of the Poor

475 Law and Criminology I: Search for the Causes of Criminal Behavior

476 Law and Criminology II: Society's Responses to the Criminal Offender

477 The Police and the Community

487 Interdisciplinary Seminar on the Juvenile Court

504 Formulation of Natural Resources Policy

592 Seminar: Constitutional Law

OTHER ADVANCED COURSES

591 Legislative Drafting (2)

Zinn

Advanced instruction and practice in legislative drafting. (RP) (Spring—evening)

592 Seminar: Constitutional Law (2)

Dixon

Group study of contemporary problems in constitutional law; process of constitutional litigation; problems of effectuating constitutional guarantees. (RP) (Spring—day)

593 Seminar: American Legal History (2)

D. Green

From the outbreak of the Revolution at Lexington and Concord to the death of Chief Justice Marshall. An examination of men, events, and movements that have particular significance in the unfolding of our laws and legal institutions in this formative period of our national life, including a critical examination of some major historical work such as Beveridge's *Life of Marshall*. (RP) (Spring—day)

594 Negligence Trial Techniques (2)

Goldsborough

Open to undergraduates with 56 hours or more, including Law 207, 218, 232; and to graduate students and young lawyers without experience in the trial of a negligence case. Recent developments in the principal areas of negligence law; extension of fundamental concepts of damages and principal aspects of settling negligence case; preparation and trial of negligence case; contemporary liability insurance policy and its impact upon tort litigation; literature of tort law. (RP) (Not offered 1969-70)

596 Seminar: Contracts (2)

Freedman

Advanced problems in contracts, such as the relationship of contract and tort (substantively, procedurally, and in measuring damages), Article II of the Uniform Commercial Code, product liability, commercial frustration, unconscionability, remedies, and anticipatory breach. (RP) (Not offered 1969-70)

598 Research in Public Law (2)

Staff

Registration limited to students with at least a *B* average who have had a seminar or comparable course in field of proposed research. Request in writing, with proposed outline of topic of research, must be submitted to the Dean at least one month prior to registration day. Work must be completed within the semester and paper submitted not later than last day of classes. Students may repeat this course once for credit with the approval of the Dean. (RP) (Fall and spring—as arranged)

599-600 Thesis (2-2)

Students must register for two successive semesters. (Academic year—as arranged)



SPECIAL PROGRAMS IN RESEARCH AND INSTRUCTION

GOVERNMENT CONTRACTS PROGRAM

Director John Cibinic, Jr.

Assistant Director Gilbert J. Ginsburg

A COMPREHENSIVE GOVERNMENT CONTRACTS PROGRAM provides continuing instruction for industry and government personnel in this field and a program of courses leading to the Master of Laws degree in Government Procurement Law. The program includes (1) short seminars; (2) two-week courses in advanced problems in the field; (3) an annual institute treating a problem of contemporary importance; (4) an annual conference in a major area; (5) compilation of materials for use in current courses; (6) publication of a series of monographs treating special problems in the field; and (7) special research projects.

COMPUTERS-IN-LAW INSTITUTE

Director Irving Kayton

The Computers-in-Law Institute is coping with the problems posed by the advent of computers in the practice and theory of law. Projects are underway for the purpose of advancing the state of knowledge and pedagogical techniques connected with the law-computer interface. Major areas of current activity and interest include legal protection of computer programs (programs are the instructions by means of which the user instructs the machine to perform his tasks); antitrust problems in the computer industry; computerized legal information retrieval systems; automatic composition of legal publications; systems studies oriented toward preserving the privacy of the individual in connection with large computerized data centers; computerization of land records and mechanization of routine court administration; and the application of computer techniques to a generalized reapportionment procedure. Other areas of interest include the impact of the computer on taxes and telecommunications. Current educational programs include the annual "Law of Software Conference" and the "Computers and Tax Conference."

INSTITUTE OF LAW, PSYCHIATRY, AND CRIMINOLOGY

Director Richard C. Allen

Co-director Leon Yochelson

The Institute of Law, Psychiatry, and Criminology draws upon the insights and techniques of the behavioral sciences in areas of mutual concern to law and its sister disciplines, with special emphasis in the fields of forensic psychiatry and criminology.

LAW, SCIENCE, AND TECHNOLOGY PROGRAM

Director Harold P. Green

The Law, Science, and Technology Program deals with the reciprocal relationships between law and science, providing courses, seminars, research studies, and publications to equip the legal profession to deal more effectively with the social, economic, political, and legal consequences of the nation's present massive commitment to scientific progress.

PATENT, TRADEMARK, AND COPYRIGHT RESEARCH INSTITUTE

Director Louis J. Harris

The Patent, Trademark, and Copyright Research Institute is engaged in gathering and disseminating knowledge regarding the principles, facts, and practical operations of the patent, trademark, copyright, and related systems of laws of the United States and other countries. The Institute journal, *IDEA*, is published five times yearly.

URBAN LAW INSTITUTE

Director Jean C. Cahn

The Urban Law Institute utilizes a coordinated approach between the legal profession and other professions, such as urban and regional planning, medicine, and epidemiology and environmental health, to develop solutions to the problems of the poor. The major goal is economic development of the inner-city by its inhabitants. Graduate lawyers, acting as corporate attorneys, assist the poor in creating viable legal institutions capable of developing management services and technical expertise needed to support community growth and change.



THE GEORGE WASHINGTON LAW ASSOCIATION

THE GEORGE WASHINGTON LAW ASSOCIATION was founded in 1912 and has been affiliated with the General Alumni Association since 1926. Its purposes as stated in the constitution are to promote high standards of legal education, to keep the alumni of the school in close touch with one another, especially with members of their own classes, to gather and publish at intervals information as to the whereabouts and activities of these alumni, and to further the interests of the school.

Eligible members are those who have matriculated in the school or National University and have left in good standing, and any member or former member of the faculty of the school. Active members are those eligible members who are current contributors to the Law Annual Support Program of the University and life members of the George Washington Law Association.

The Association plans publication periodically of the Law Alumni Directory. Law Alumni are urged to keep the Alumni Office informed of their whereabouts so that directory information can be kept up to date.

The Law Alumni Office is in Bacon Hall, 2000 H Street, N.W., Washington, D.C.

OFFICERS FOR 1968-69

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 James Robertson, LL.B. 1965; 5222 Roosevelt Street, Bethesda, Md. 20014
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- Robert D. Rolander, LL.B. 1953; 5230 W. Plymouth Drive, Littleton, Colo. 80120
- John V. Skinner, Jr., J.D. 1962; 618 Fulton Federal Building, Atlanta, Ga. 30303
- Ethan Stroud, LL.M. 1956; 1401 Main Street, Dallas, Texas 75202
- Sidney Struble, J.D. (Nat'l) 1917, LL.M. (Nat'l) 1919; 533 Seventh Street, Brooklyn, N.Y. 11215
- Gary L. Theurer, LL.B. 1954; 7404 Bybrook Lane, Chevy Chase, Md. 20015
- William C. Thornton, LL.B. 1961; 227 Hill Street, Reno, Nev. 89501
- Richard A. Ward, J.D. 1965; 1100 Connecticut Avenue, N.W., Washington, D.C. 20036
- Sterry R. Waterman, Law (1926); 12 Highland Avenue, St. Johnsbury, Vt. 15819
- George F. Wilsey, J.D. 1958; 275 4th Street North, St. Petersburg, Fla. 33701
- Leon L. Wolfstone, J.D. 1939; 11010 Northeast 26th Place, Bellevue, Wash. 98004
- James O. Wright, J.D. 1938; P.O. Box 1966, Detroit, Mich. 48235
- Joseph S. Wright, Jr., LL.B. 1963; 208 S. LaSalle Street, Chicago, Ill. 60604
- Glen A. Wilkinson, ex officio, J.D. 1938; 1616 H Street, N.W., Washington, D.C. 20006





THE UNIVERSITY

HISTORY AND ORGANIZATION

THE GEORGE WASHINGTON UNIVERSITY had its beginning in 1821 as The Columbian College in the District of Columbia. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University. The debt of the University to George Washington whose name it bears is an intangible one.

George Washington, as President and as private citizen, had urgently insisted upon the establishment of a National University in the Federal City. There he hoped that, while being instructed in the arts and sciences, students from all parts of the country would acquire the habits of good citizenship, throwing off local prejudices and gaining at first hand a knowledge of the practice, as well as the theory, of republican government. To further the materialization of his hopes, Washington left a bequest of fifty shares of The Potomac Company "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." The Congress never extended "a fostering hand." The Potomac Company passed out of existence, and Washington's bequest became worthless.

Fully conscious of Washington's hopes, but motivated primarily by a great missionary urge and the need for a learned clergy, a group of dedicated ministers and laymen sponsored a movement for the establishment of a college in the District of Columbia. Inspired largely by the zeal and energy of the Reverend Luther Rice, they raised funds for the purchase of a site and petitioned Congress for a charter. After much delay and amendment, Congress granted a charter which was approved by President Monroe on February 9, 1821. To safeguard the College's nonsectarian character it provided "that persons of every religious denomination shall be capable of being elected Trustees: nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages thereof, for or on account of his sentiments in matters of religion."

During the entire time when the institution was known as Columbian College, its activities were centered on College Hill, a tract of forty-six and a half acres between the present Fourteenth and Fifteenth Streets extending north from Florida Avenue to somewhat beyond Columbia Road. The Medical School was located downtown. For the better part of the Columbian University period, the

buildings of the University were situated along H Street between Thirteenth and Fifteenth Streets. The Medical School group still remains there.

During the last half century the University's present plant has been developed in that section of the old First Ward familiarly known as "Foggy Bottom," between Nineteenth and Twenty-fourth Streets, south of Pennsylvania Avenue. The area is not without its reminders of historic interest to the University. President Monroe, who signed the Charter, lived at 2017 Eye Street. The first President of the Board of Trustees, the Reverend Obadiah B. Brown, was for fifty years the pastor of a church at Nineteenth and Eye Streets, and Washington selected Twenty-third and E Streets as the site of the National University he had hoped to see established.

The University as it is now organized consists of Columbian College of Arts and Sciences (undergraduate); the Graduate School of Arts and Sciences; the professional schools, which include the National Law Center and the schools of Medicine, Engineering and Applied Science, Education, Government and Business Administration, Public and International Affairs; the College of General Studies; the Division of University Students; and the Summer Sessions.

The George Washington University is privately endowed and is governed by a self-perpetuating Board of Trustees of which the president is an ex officio member.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

LOCATION

The George Washington University is in downtown Washington, four blocks west of the White House. Within a few blocks are the buildings housing the offices of many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor. Also readily accessible are the Capitol, the Library of Congress, the National Archives, and the Supreme Court and other federal courts.

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- James Oliver Murdock, *Professor Emeritus of Law*
Ph.D. 1916, University of Chicago; LL.B. 1924, Harvard University
- Alvin LeRoy Newmyer, *Professor Emeritus of Law*
LL.B. 1906, George Washington University

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- Jeffrey Marshall Albert, *Professor of Law*
B.A. 1956, Princeton University; LL.B. 1959, Harvard University; LL.M. 1962, New York University
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*Professors, Adjunct Professors, Associate Professors, Assistant Professors, and the Librarian of the Law Library constitute the Faculty of the National Law Center. The President of the University, the Vice President for Academic Affairs, the Registrar of the University, and the Director of Admissions of the University are ex officio members of the Faculty.

Hans Aufricht, *Professorial Lecturer in Law*

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* On sabbatical leave fall semester 1969-70.

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LL.B. 1940, George Washington University
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- David Benson Weaver, *Professor of Law***
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- Charles James Zinn, *Professorial Lecturer in Law***
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B.B.A. 1965, University of Michigan; J.D. 1968, Detroit College of Law
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B.A. 1961, LL.B. 1964, Baylor University
- David Rogers Hendrick, Jr., *Teaching Fellow in Law***
B.A. 1965, LL.B. 1967, Baylor University
- James Garrett Tigner, *Teaching Fellow in Law***
B.S. 1961, New Mexico State University; LL.B. 1965, Baylor University
- Donald Ray Wilson, *Teaching Fellow in Law***
B.A. 1960, LL.B. 1964, University of Missouri

*For the academic year 1968-69.

THE NATIONAL LAW CENTER RECORD 1968-69

Degrees Conferred

ANNUAL COMMENCEMENT, JUNE 2, 1968

JURIS DOCTOR

Student Marshal: Linda Rubin Singer

- | | |
|--|---|
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| James Edward Ablard, Virginia (With Honors) | B.A. 1964, Syracuse University |
| B.A. 1965, Pennsylvania State University | Edmund Cooke Bennett II, Rhode Island |
| Essie Ann Ablove, New York B.A. 1965, Barnard College | B.A. 1965, University of Bridgeport |
| George O. Ackerman, District of Columbia B.A. 1964, Marquette University | Margaret Ann Benton, Florida B.A. 1964, Ohio State University |
| Jon Holden Adams, New York B.A. 1965, Colgate University | Jerald Francis Berger, New York B.B.A. 1963, City College, New York |
| Lawrence Jay Adlerstein, New York B.A. 1965, Alfred University | Carolyn Betts, Virginia B.S. 1954, North Texas State University |
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| M.A.T. 1965, Northwestern University | Joel Leslie Blumenfeld, New York B.A. 1965, Brooklyn College |
| Gerald Kermit Anders, Maryland B.A. 1965, University of Maryland | Edward Norman Bomsey, New York B.A. 1965, New York University |
| Thomas Leo Appler, Virginia B.A. 1965, Princeton University | Robert Alan Witt Boraks, Maryland (With Honors) |
| Alan Stephan Balaban, Virginia B.A. 1964, University of Richmond | B.S. 1965, University of Pennsylvania |
| Howard Alan Balaban, New York B.A. 1965, George Washington University | Joseph Paul Bornstein, Virginia B.S. 1965, University of Virginia |
| Raymond Banoun, New York (With Honors) | Lawrence Malvin Brauer, New York B.S. 1965, American University |
| B.A. 1965, City College, New York | Roy Stanley Bredder, New Jersey B.A. 1965, Duke University |
| William Franklin Banta, Virginia (With Honors) | Steven Leslie Briggerman, Virginia (With Honors) |
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| Carl David Barrier, Kansas B.A. 1964, M.A. 1965, University of Kansas | Michael Weill Broido, New York (With Honors) |
| Jeffrey Warner Bartlett, Maryland B.A. 1965, Beloit College | B.A. 1965, University of Pennsylvania |
| Joseph Lawrence Basralian, New Jersey B.S. 1965, Fairleigh Dickinson University | David Edward Bunim, New York B.A. 1965, University of North Carolina at Chapel Hill |
| Alvin Stuart Bass, District of Columbia (With Honors) | Kenneth Michael Bushell, New York (With Honors) |
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| M.S. 1964, Stanford University | James Rowan Cameron, New York |
| David Harold Neilson Bean, California B.A. 1963, San Diego State College | B.S. 1965, McGill University, Canada |
| William Gene Becker, District of Columbia (With Honors) | John David Castagnello, New York (With Honors) |
| B.S. in M.E. 1964, Carnegie Institute of Technology | B.A. 1965, New York University |
| Stephen Michael Behar, New York B.A. 1965, Brooklyn College | Erie DeGrasse Chapman III, Virginia B.S. 1965, Northwestern University |
| John William Behringer, Virginia (With Honors) | Robert Jay Charnoff, New York B.A. 1965, Queens College, N.Y. |
| B.S. 1959, University of Dayton | Douglas Roger Clark, New Jersey B.A. 1965, Bucknell University |

- Robert Gregory Clark III, District of Columbia
(With Honors)
B.S. 1964, Massachusetts Institute of Technology
Ira Mark Cohen, New Jersey
B.A. 1965, University of Pennsylvania
Jay Martin Cohen, Pennsylvania
B.A. 1965, Temple University
Leonard Nelson (Cohen), New Jersey
(With Honors)
B.A. 1965, Rutgers, the State University
R. Joel Coslov, Pennsylvania
B.A. 1965, Brandeis University
Richard Olaf Cunningham, Maryland
(With Honors)
B.A. 1964, M.A. 1966, George Washington University
Jon Stuart Davis, Ohio
B.A. 1965, University of Michigan
Malcolm Howard Davis, New York
B.A. 1965, New York University
Ken Clark Decker, Indiana
(With Honors)
B.S. in M.E. 1964, Purdue University
William Thomas Deitz, New Jersey
Litt. B. 1953, Rutgers, the State University
Daniel K. Denenberg, Virginia
B.S. in Ch.E. 1965, University of Maryland
Lawrence Bruce Diener, District of Columbia
B.A. 1965, Johns Hopkins University
Jerry Lee Dier, Maryland
B.A. 1965, University of Maryland
Leland George Dribin, Maryland
B.A. 1965, George Washington University
Robert Anthony Dublin, Virginia
B.A. 1965, George Washington University
John Roger Dugan, Maryland
B.A. 1965, College of the Holy Cross
Arnold Dennis Dunchock, Michigan
Ph.D. 1965, Wayne State University
William Henry DuRoss III, Maryland
B.A. 1965, Yale University
Wendell Brent Eames, Maryland
B.A. 1965, Brigham Young University
Douglas Roger Earle, Virginia
(With Honors)
B.A. 1965, Michigan State University
Lawrence Edelman, Virginia
B.S. in Ch.E. 1965, University of Maryland
Kenneth Robert Fields, New York
B.A. 1965, New York University
Jeffrey Hartman Fisch, Virginia
B.S. 1965, University of Pennsylvania
Emanuel Stanley Fish, New Jersey
B.A. 1965, Rutgers, the State University
Kenneth Hill Fox, New York
B.A. 1965, Lafayette College
Martin Lawrence Freedman, New York
B.A. 1964, Alfred University
M.A. 1965, University of Pittsburgh
Mark Samuel Freedman, Maryland
B.A. 1965, Georgetown University
Mary Lee Garfield, District of Columbia
B.A. 1965, George Washington University
David Louis Garrison, District of Columbia
B.S. in Ch.E. 1963, Oregon State University
Mary Joe Gaw, District of Columbia
(With Honors)
B.A. 1963, Wellesley College
Robert Lawrence Geltzer, New York
B.A. 1965, Queens College, N.Y.
- Richard Dewayne Gilroy, District of Columbia
B.A. 1965, Ohio University
Gerald Howard Glanzman, Virginia
(With Honors)
B.S. in M.E. 1964, Purdue University
Gary Glaser, District of Columbia
B.A. 1965, City College, New York
James Marshall Goldberg, District of Columbia
(With Honors)
B.S. 1961, Syracuse University
Robert Lionel Graham, Virginia
B.B.A. 1964, George Washington University
David Kirk Grayson, Maryland
(With Honors)
B.A. 1965, George Washington University
Stephen Michael Greenberg, Virginia
(With Honors)
B.A. 1965, Washington and Jefferson College
Abraham Jerome Greenstein, New York
B.A. 1965, New York University
Michael Philip Greenstein, Pennsylvania
B.A. 1965, LaSalle College
Cleo Griffith, Maryland
(With Honors)
B.A. 1965, Mount Holyoke College
Ronald William Habel, Virginia
B.S. 1960, Utah State University of Agriculture and Applied Science
Richard Alan Hampe, Massachusetts
(With Honors)
B.A. 1965, University of Massachusetts
Jack Weston Hanson, Virginia
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B.A. 1965, University of North Dakota
John Layton Hanson, Jr., Virginia
B.S. 1955, American University
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B.S. 1960, College of William and Mary
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B.S. 1965, University of Maryland
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B.S. in Ch.E. 1961, Purdue University
Charles Allen Heugland, Virginia
B.S. 1959, U.S. Naval Academy
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B.S. 1963, University of Virginia
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B.A. 1965, University of Washington

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Richard Stephen Lane, New York
(With Honors)
B.S. 1965, University of Virginia

Robert Alan Lerman, Pennsylvania
B.A. 1964, Pennsylvania State University

Robert Charles Lewis, Maryland
(With Honors)
B.A. 1965, University of Maryland

James Robert Loftis III, Virginia
(With Honors)
B.A. 1965, Washington and Lee University

Raphael Vincent Lupo, Virginia
B.E.E. 1963, George Washington University

David Lustbader, New Jersey
B.A. 1965, Grinnell College

Edward Harvey Lyman, California
B.A. 1965, Sacramento State College

Raymond Hardy Madden III, Virginia
B.A. 1965, Louisiana Polytechnic Institute

Leonard Jan Malamud, Maryland
B.A. in Govt. 1963, M.A. in Govt. 1965, George Washington University

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B.A. 1965, University of Pittsburgh

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B.A. 1965, George Washington University

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B.A. 1959, Washington and Jefferson College

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B.A. 1965, Oberlin College

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B.A. in Govt. 1965, George Washington University

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B.A. 1965, George Washington University

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B.A. 1965, Trinity College, Conn

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B.A. 1964, Syracuse University

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B.A. 1965, University of Virginia

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B.A. 1953, Harvard University

M.S. 1954, California Institute of Technology

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B.S.(M.E.) 1965, Northwestern University

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B.S. 1956, U.S. Military Academy

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B.A. 1964, George Washington University

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B.A. 1965, University of Nebraska at Omaha

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B.A. 1965, Hamilton College

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B.S. 1965, Marquette University

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B.Ch.E. 1962, Villanova University

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B.A. 1962, Johns Hopkins University

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B.A. 1965, Fairfield University

- Valerie Moore O'Keefe, New York
B.A. 1965, Manhattanville College
- James Edward Olds, Minnesota
B.S. in M.E. 1960, University of North Dakota
- Peter David Olexy, Virginia
(With Honors)
B.S. in Ch.E. 1965, Pennsylvania State University
- Andrew Pansie, Jr., District of Columbia
(With Honors)
B.S. 1963, Northwestern University
- Roger White Parkhurst, Indiana
B.S. 1965, Purdue University
- Lionel Eugene Pashkoff, Texas
B.A. 1965, University of Maryland
- Robert James Patton, Jr., Virginia
(With Honors)
B.A. 1965, Duke University
- Edwin LeRoy Phelps, Virginia
B.S. 1962, Illinois Wesleyan University
- James Howard Phillips, District of Columbia
B.S. 1965, Ohio State University
- Robert Kenneth Pirraglia, Rhode Island
B.A. 1965, Providence College
- Alan Lee Potter, Virginia
(With Honors)
B.S. 1961, Virginia Polytechnic Institute
- Donald Douglas Price, Virginia
(With Honors)
B.S. 1965, University of Missouri
- Audrey Gardner Racines, District of Columbia
B.A. 1965, George Washington University
- James William Ratzlaff, Virginia
(With Honors)
B.S. 1958, University of Kansas
- Anson Ostrom Rego, Hawaii
(With Honors)
B.A. 1965, Claremont Men's College
- Gregory Strahl Reising, Maryland
B.S. in Govt. 1964, Indiana University
- Michael Arthur Resnick, New York
B.A. 1965, Brooklyn College
- Michael Wayne Rice, Pennsylvania
B.A. 1965, Mount Saint Mary's College, Md.
- Enos Richardson, Jr., District of Columbia
B.A. 1957, Harvard University
- Mary Margaret Milner Richardson, Virginia
(With Honors)
B.A. 1965, Vassar College
- Stephen Charles Richman, New Jersey
B.S.(Bus. Adm.) 1965, State University of New York at Buffalo
- David Prince Riley, Connecticut
B.A. 1964, Middlebury College
- James A. Ririe, Virginia
B.S. 1964, Brigham Young University
- William Norman Rogers, Maryland
(With Honors)
B.A. in Govt. 1965, George Washington University
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B.A. 1965, Washington and Jefferson College
- David Ross Rosenfeld, Virginia
B.A. 1965, Hofstra University
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(With Honors)
B.A. 1965, University of Massachusetts
- Howard Philip Roy, New York
(With Honors)
B.A. 1965, Queens College, N.Y.
- Percy Hickling Russell, Jr., Maryland
B.A. 1963, Dartmouth College
- Jeremy Sachs, Maryland
B.A. 1964, University of Maryland
- Milton Saunders Sales, Maryland
B.S. in M.E. 1964, Purdue University
- Dolph David Sand, Ohio
B.S. 1965, Ohio State University
- Glenn Frederick Santmire, New York
B.A. 1965, New York University
- Richard Clark Sargent, Virginia
(With Honors)
B.S. in F.S. 1960, Georgetown University
- Ronald Gordon Scheraga, New Jersey
B.A. in Govt. 1965, George Washington University
- Henry Louis Philip Schmelzer, Massachusetts
B.A. 1965, University of Maine
- Donald Rector Schumacher, New York
B.A. 1965, Colgate University
- Peter Otto Schondler, New Jersey
B.A. 1965, Princeton University
- Lawrence Wiley Seccrest III, Virginia
(With Honors)
B.A. 1965, American University
- Robert Paul Seitter, Pennsylvania
(With Honors)
B.S. in Com. 1964, Drexel Institute of Technology
- Richard Alan Seitz, California
(With Honors)
B.A. 1964, Washington State University
- Ronald Haig Shaluan, New Jersey
B.A. 1965, Franklin and Marshall College
- Stanley Herbert Shayne, Ohio
B.S. 1965, Miami University
- Harvey Gerald Sherzer, Pennsylvania
(With Honors)
B.A. 1965, Temple University
- Barry Silber, Maryland
B.A. 1965, University of Maryland
- Joel Anton Silverman, Virginia
(With Honors)
B.E. 1965, City College, New York
- Allen Sims, Virginia
(With Honors)
B.A. 1965, Idaho State University
- Linda Rubin Singer, Maryland
(With Highest Honors)
B.A. 1963, Radcliffe College
- William David Sivitz, Ohio
(With Honors)
B.A. 1965, Northwestern University
- Alan Pinto Skolnick, New York
B.A. 1965, Case Western Reserve University
- Arthur Dwight Smith, Utah
(With Honors)
B.S. 1965, Utah State University of Agriculture and Applied Science
- Richard Dallas Smith, District of Columbia
B.A. 1964, George Washington University
- Robert Carl Smith, Virginia
(With Honors)
B.A. 1964, Cornell University
- Steven Wayne Smoger, New Jersey
B.A. 1965, Pennsylvania State University
- Martin Jeffrey Snider, Virginia
B.A. 1965, Boston University
- Richard Ward Snowdon III, Virginia
(With Honors)
B.S. 1965, Syracuse University
- Robert Neil Solomon, Virginia
(With Honors)
B.A. 1965, University of Florida

Ira Lee Sorkin, New York
B.A. 1965, Tulane University of Louisiana
Marvin Jay Spivak, Maryland
(With Honors)
B.S. (Electronics) 1964, George Washington University
James Charles Stein, Virginia
B.A. 1965, Rollins College
Michael Angelo Sterlacci, New York
B.A. 1965, Seton Hall University
Robert Harris Stevenson, Pennsylvania
B.A. 1964, Washington and Jefferson College
Hunsdon Cary Stewart, California
B.A. 1965, University of Oregon
Paul Richard Steyermark, Maryland
(With Honors)
License in Chemical Sciences 1949, Catholic University of Louvain, Belgium
Ph.D. 1955, University of Montreal, Canada
Loraine Hall Strait, New York
B.A. 1965, William Smith College
Diane Marie Sullivan, District of Columbia
B.A. 1965, Georgetown University
John Leon Szabo, Indiana
B.S. in F.S. 1965, Georgetown University
James Roscoe Tate, Virginia
(With Honors)
B.Ch.E. 1965, Georgia Institute of Technology
Larry Lee Thomas, Maryland
B.A. 1965, College of William and Mary
William Robert Thomas II, District of Columbia
B.A. 1965, Yale University
Robert Samuel Tignor, District of Columbia
(With Honors)
B.A. 1965, Howard University
Malcolm Raymond Trifon, California
(With Honors)
B.A. 1965, Occidental College
Kenneth Jesse Tuggle, Virginia
B.A. 1962, Yale University
Thomas Vincent Vakerics, District of Columbia
(With Honors)
B.A. 1965, Bowling Green State University

Robert Roy Vawter, Jr., Florida
(With Honors)
B.A. 1965, George Washington University
Robert Joseph Verdisco, New York
B.A. 1965, Pennsylvania State University
Robert William Villareale, Maryland
B.A. 1965, Providence College
Robert Paul Wade, District of Columbia
B.A. 1963, George Washington University
Sidney Arthur Wallace, Florida
(With Honors)
B.S. 1949, U.S. Coast Guard Academy
Gerald Douglas Warner, Michigan
B.A. 1965, Michigan State University
Jeffrey Noboru Watanabe, Hawaii
B.A. 1965, University of California, Berkeley
Timothy James Waters, Virginia
(With Honors)
B.S. 1965, University of San Francisco
John Graham Watson II, New Jersey
B.A. 1965, Wesleyan University
Stanley Morris Weinberg, Virginia
(With Honors)
B.S. in E.E. 1964, Drexel Institute of Technology
Gary David Weinstein, Virginia
B.A. 1965, Tulane University of Louisiana
Owen Wayland Wells, Maine
B.A. 1965, University of Maine
Carole Winston Wilson, District of Columbia
B.A. 1965, Vassar College
Henry Riddle Wray, Pennsylvania
(With Honors)
B.A. 1965, Washington and Jefferson College
Arthur Grant Yuter, New York
B.B.A. 1965, City College, New York
Michael Alan Zablocki, New York
B.A. 1965, Brooklyn College
Robert Peter Zaepfel, New York
B.S. in E.E. 1965, University of Notre Dame

MASTER OF LAWS

Philip Lee Babin, Virginia
B.A. 1962, Lehigh University
LL.B. 1965, Cornell University
Gerald Cullen Baker, Maryland
B.S. 1958, Marquette University
LL.B. 1961, University of Wisconsin
Frederic Eugene Dorkin, Virginia
B.A. 1953, Dartmouth College
LL.B. 1956, Duke University
William Perry Drav, Virginia
B.S. 1962, J.D. 1964, University of Wyoming
Robert Henry Feldman, Virginia
B.S. in B.A. 1963, M.Acct., LL.B. 1966,
University of Arizona
Richard Sidney Fisher, Maryland
B.S. 1959, Pennsylvania State University
LL.B. 1962, Cornell University
Charles Francis Flynn, District of Columbia
B.E.E. 1962, LL.B. 1965, Catholic University of America
William Grobman, Maryland
B.S. in E.E. 1944, Rutgers, the State University
J.D. 1952, George Washington University
Lawrence Francis Henneberger, Maryland
B.B.A. 1960, LL.B. 1962, Loyola University, La.

Shirley Wayne Holt, Virginia
B.A. 1957, Tulane University of Louisiana
J.D. 1966, American University
Joseph Daniel Jeffrey, Maryland
B.S. 1941, U.S. Naval Academy
B.S. in Ae.E. 1950, U.S. Naval Postgraduate School
M.M.E. 1951, Rensselaer Polytechnic Institute
J.D. 1964, George Washington University
Bernard Jack Jerlstrom, Virginia
B.A. 1958, Duke University
LL.B. 1964, University of Miami
Albert McGregor Johnston, Jr., Virginia
B.S. 1963, Michigan State University
LL.B. 1966, University of Minnesota
James Russell Jurecka, Virginia
B.A. 1957, Rice Institute
LL.B. 1965, George Washington University
Lee Neilson Koehler, Maryland
B.A. 1961, Gettysburg College
LL.B. 1965, University of Maryland
Arthur Anthony Lemann III, Virginia
B.A. 1964, Tulane University of Louisiana
LL.B. 1967, Loyola University, La.

Ernest Bainbridge Lipscomb III, South Carolina
 B.S. 1963, J.D. 1965, University of Mississippi
 George Wesley Miller, New York
 B.A. 1963, Princeton University
 LL.B. 1966, Harvard University
 Melvin Irwin Monzack, Maryland
 B.S. 1962, University of Rhode Island
 LL.B. 1965, George Washington University
 Martin Paskoff, Maryland
 B.A. 1959, Brooklyn College
 LL.B. 1962, Brooklyn Law School
 Courtland Dixon Perry II, Maine
 LL.B. 1961, University of Virginia
 Ronald James Roessler, Virginia
 B.A. 1961, Miami University
 J.D. 1964, University of Wisconsin
 William Allen Sanders, Virginia
 LL.B. 1957, University of Alabama
 Joseph Roy Seiger, New York
 B.A. 1964, University of Pittsburgh
 J.D. 1967, University of Michigan

Charles Elliott Shapiro, Maryland
 B.S. 1960, University of Maryland
 J.D. 1963, George Washington University
 Barry Lee Springel, Maryland
 B.S. 1964, Drexel Institute of Technology
 J.D. 1967, University of Michigan
 Jerome Kenneth Tankel, Virginia
 B.A. 1957, University of Illinois
 LL.B. 1963, Harvard University
 Herbert Samuel Urbach, Virginia
 B.A. 1958, Middlebury College
 LL.B. 1961, University of Virginia
 Thomas Dewey Wise, South Carolina
 B.A. 1961, LL.B. 1964, University of South Carolina
 Frederick Clarke Woodruff, Jr., Virginia
 B.A. 1959, Colgate University
 LL.B. 1962, Syracuse University
 John Ward Wright, District of Columbia
 LL.B. 1950, University of Miami

MASTER OF COMPARATIVE LAW

Michele Barbieri, Virginia
 J.D. 1965, University of Pisa, Italy

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 LL.B. 1961, Keio University, Japan

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JURIS DOCTOR

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 B.S. in B.A. 1964, M.B.A. 1965, American University
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 (With Honors)
 B.A. 1963, Harvard University
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 B.A. 1964, Dartmouth College
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 (With Honors)
 B.S. 1961, University of Wisconsin
 M. Bioradiol, 1963, University of California, Berkeley
 Ph.D. 1965, Wayne State University
 David Michael Davenport, Virginia
 B.S. 1965, Mount St. Mary's College, Md.
 James Benedict Deerin, Jr., Virginia
 B.A. 1965, The Citadel
 John Thomas Dunn, Virginia
 B.A. 1965, University of Notre Dame
 John Wayne Edmiston, Virginia
 B.A. 1963, Miami University
 Joseph Ferrante, Jr., Maryland
 B.A. 1962, Johns Hopkins University
 M.A. 1964, New York University
 Robert George Fierer, Pennsylvania
 B.S. 1964, University of Notre Dame
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 Theodore Emil Galanthay, Virginia
 B.E.E. 1961, Clarkson College of Technology
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 B.A. 1965, Amherst College
 Ralph Stephen Greer, Maryland
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 B.S. 1953, U.S. Military Academy

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 B.A. 1965, Michigan State University
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 B.A. 1963, University of Michigan
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 B.A. 1952, George Washington University
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 B.A. 1965, University of Michigan
 Joseph Raymond Keipl, New Jersey
 B.A. 1965, Georgetown University
 Robert George Kinney, Maryland
 B.A. 1960, Ohio University
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 B.A. 1964, College of Idaho
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 B.S. 1959, Iona College
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 Cecil Paul Means, District of Columbia
 B.A. 1957, University of Nebraska
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 B.A. 1965, Fairleigh Dickinson University
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 B.S. 1955, Utah State University of
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 Thomas Michael Tweel, Virginia
 B.B.A. 1964, Marshall University

John Aaron White, Jr., Nevada
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 (With Honors)
 B.S. (E.E.) 1965, Princeton University
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 B.A. 1962, Yale University
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 B.A. 1965, Seton Hall University
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 B.A. 1962, Pomona College

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 B.S. in B.A. 1954, Syracuse University
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 B.A. 1960, The Citadel
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 B.S. 1962, L.L.B. 1965, University of Wisconsin
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 B.A. 1956, University of North Carolina at
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 Penn Benjamin Chabrow, Virginia
 B.S. 1960, Muhlenberg College
 J.D. 1963, George Washington University
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 B.S. 1949, University of Kansas
 L.L.B. 1952, George Washington University
 William Pierce Elliott, Jr., Tennessee
 B.A. 1958, Vanderbilt University
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 B.S. 1949, U.S. Naval Academy
 L.L.B. 1958, Boston College
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 B.A. 1963, Princeton University
 L.L.B. 1966, University of Virginia
 Willard Edmonston Hoag, District of Columbia
 B.E. in Ch.E. 1943, M.S. in Ch.E. 1947,
 University of Southern California
 L.L.B. 1962, Southwestern University
 William Christopher Lynch, Virginia
 B.A. 1953, L.L.B. 1956, Boston College
 William Ronald Palmer, Virginia
 B.A. 1956, L.L.B. 1958, University of Illinois
 Leon Duane Santman, Maryland
 B.S. 1952, U.S. Coast Guard Academy
 L.L.B. 1963, University of Houston
 Daniel Trocki, Virginia
 B.S. in Ed. 1954, L.L.B. 1961, Temple
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 B.A. 1963, Duquesne University
 J.D. 1966, Case Western Reserve University
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 L.L.B. 1952, Boston University

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 M.A. 1960, Godjah Mada University, Indonesia
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 L.L.B. 1966, Universidad de Nuevo Leon,
 Mexico

MASTER OF COMPARATIVE LAW (American Practice)

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 Dr.Jur. 1952, University of Budapest, Hungary
 M.S. in L.S. 1962, University of North
 Carolina at Chapel Hill

Odette Jibrail Raymond, District of Columbia
 B.A. 1958, Baghdad University, Iraq

WINTER CONVOCATION, FEBRUARY 22, 1969

JURIS DOCTOR

Student Marshal: James Francis Meade

- Bruce Leonard Adams, New Jersey
B.S. 1965, Newark College of Engineering
- Robert Montague Adams III, Maryland
B.A. 1966, Gettysburg College
- Michael William Beavers, District of Columbia
B.A. 1966, Washington and Jefferson College
- Dorothy Beling, Maryland
B.A. 1951, Smith College
- Peyton Boswell III, Virginia
B.A. 1962, Lehigh University
- Patrick Francis Bright, Virginia
(With Honors)
B.S. 1965, Georgetown University
- Dennis Eric Codlin, Maryland
B.A. 1966, Miami University
- Ronald Dennis Cohn, Maryland
(With Honors)
B.S. 1965, University of Illinois
- Stephen Richard Creyke, Maryland
B.F.A. 1963, Carnegie-Mellon University
- James Edwin Dietel, District of Columbia
B.S. 1964, Southern Methodist University
- Troy Gene Dillahunt, Virginia
B.S. in Ch.E. 1965, Oklahoma State University
- Seymour DuBow, Virginia
B.A. 1965, Northwestern University
- George Chamberlain Duncan, Virginia
B.S. 1939, U.S. Naval Academy
- M.S. 1947, Massachusetts Institute of Technology
- Gerald Myer Fisher, Maryland
(With Honors)
B.S. 1958, Drexel Institute of Technology
- John Joseph Geraghty, Virginia
(With Honors)
B.A. 1957, S.T.B. 1959, St. Mary's Seminary and University
- Roger Milton Gregory, Jr., Maryland
(With Honors)
B.S. 1947, U.S. Naval Academy
- Donald Bernard Hordes, Maryland
(With Honors)
B.A. 1966, University of Maryland
- Curtis Jay Karpel, Maryland
B.A. 1966, American University
- Peter James Lynn, Maryland
B.A. 1966, Yale University
- George Allison Marshall, Maryland
B.A. 1962, Hamline University
- James Francis Meade, New York
(With Honors)
B.S. 1961, U.S. Coast Guard Academy
- Burdvall Dunham Miller, Virginia
(With Honors)
B.S. 1945, Albright College
- M.S. 1952, Ohio State University
- Herbert Walter Mylius, Virginia
B.S. 1960, University of Rochester
- Neil Takeo Nakamura, District of Columbia
B.A. 1966, University of Hawaii
- Norman Fuller Nilson, Virginia
B.S. 1965, University of Utah
- John Noble, Maryland
B.A. 1961, Juniata College
- John Orman, Virginia
B.L.E. 1963, University of Florida
- Max Richard Page, Virginia
(With Honors)
B.S. in Com. 1965, Drexel Institute of Technology
- Lynne Joyce Pilot, Virginia
B.S. 1962, Miami University
- Angelo Salvatore Puglisi, Virginia
B.S. 1959, University of Maryland
- Barbara Ann Purvis, California
B.A. 1963, University of California, Riverside
- M.A. 1964, University of Washington
- James Patrick Schaller, Virginia
(With Honors)
B.A. 1965, King's College, Pa.
- Walter Charles Schlieman, Jr., New York
(With Honors)
B.A. 1961, Dartmouth College
- Ronald Jack Stern, Maryland
B.S. 1963, City College, New York
- John Remon Wenzel, Maryland
(With Honors)
B.A. 1965, George Washington University
- Roger Clyde Westley, California
B.S. 1962, M.A. 1966, University of Southern California
- Floyd William White, Jr., California
(With Honors)
B.S. 1959, U.S. Coast Guard Academy
- Van Comfort Wilks, Virginia
(With Honors)
B.S. 1963, University of Missouri
- Paul Francis Wille, Maryland
B.S. 1964, Le Moyne College
- Geoffrey Nimmons Zeh, New Jersey
B.A. 1965, Rutgers, the State University

MASTER OF LAWS

- Richard Gaspare Amato, Maryland
B.A. 1964, Georgetown University
- J.D. 1967, George Washington University
- Richard John Bodnar, Nebraska
LL.B. 1954, Creighton University
- Robert Bernard Bowtze, Maryland
B.S. 1959, Pennsylvania State University
- LL.B. 1962, University of Pittsburgh
- Nicholas William Carlin, Virginia
B.S. 1958, J.D. 1967, University of Louisville

Henry Crowell Chappell, Jr., Alabama
B.S. 1964, LL.B. 1965, University of Alabama
Dharm Paul Singh Dhillon, Maryland
B.A. 1949, M.A. 1951, LL.B. 1954, Panjab
University, India
Joseph Michael Felton, Maryland
B.B.A. 1957, St. John's University, N.Y.
LL.B. 1963, Georgetown University
Richard Joseph Gallagher, Maryland
Ph.B. 1937, College of the Holy Cross
LL.B. 1940, Harvard University
Arthur Charles Heise, Maryland
B.S. 1949, LL.B. 1952, University of Maryland
Steven David Ivins, Virginia
B.S. 1959, LL.B. 1962, University of
Pennsylvania
Wouter Keesing, Maryland
B.A. 1964, Gettysburg College
J.D. 1967, Georgetown University

Robert Lewis Malech, Maryland
B.A. 1961, Cornell University
LL.B. 1964, Boston University
Joseph Hugh McGlynn, Virginia
B.M.E. 1962, LL.B. 1965, Villanova University
James Franklin McGuirl, District of Columbia
LL.B. 1965, DePaul University
John Marx Miller, West Virginia
B.A. 1959, LL.B. 1962, West Virginia
University
Edward Walter Somers, Maryland
B.E. 1953, M.S. 1955, Johns Hopkins
University
LL.B. 1967, George Washington University
Robert Mitchell Steinbach, Virginia
B.B.A. 1962, Tulane University of Louisiana
LL.B. 1965, Boston College

MASTER OF COMPARATIVE LAW

Dean Tie-Long Chiang, Taiwan
LL.B. 1966, National Cheng-chi University,
Taiwan

Romulo Contreras Felizmeña, Virginia
LL.B. 1951, Ateneo de Manila University,
Philippines

Students Registered, Spring Semester 1969

STUDENTS REGISTERED IN THE JURIS DOCTOR PROGRAM

A

Abramson, Martin
B.E. 1965, City College, New York
Adkins, Sandra J.
B.A. 1968, Vanderbilt University
Aglietti, Terry C.
B.A. 1967, Texas A&M University
Alderman, Linda F.
B.A. 1961, University of Florida
M.A. 1962, University of Washington
Alexander, Frederick L.
B.A. 1961, Cornell University
Alexander, Robert D.
B.A. 1968, Queens College, N.Y.
Allen, Gary R.
B.A. 1963, Northwestern University
Altman, Robert A.
B.A. 1968, University of Wisconsin
Ament, Warren W.
B.A. 1963, University of Michigan
Anderson, David E.
B.S. in A.E. 1954, West Virginia University
M.S. in Ae. 1958, Ae.E. 1960, California
Institute of Technology

N.Y. Andewelt, Roger B.
B.A. 1967, Brooklyn College
Md. Appel, Richard J.
B.A. 1968, Central Michigan University
Md. Appelbaum, Richard A.
B.S. 1961, U.S. Coast Guard Academy
Va. April, Susan
B.A. 1967, Vassar College
Md. Armstrong, Brent R.
B.A. 1967, Brigham Young University
Texas Arno, James A.
B.A. 1964, University of Texas at Austin
Pa. Arnold, Richard P.
B.A. 1967, Indiana University of Pennsylvania
Mass. Artz, William E.
B.A. 1965, Ohio Wesleyan University
N.Y. Atlas, David S.
B.E. 1968, Cooper Union
Va. Ayer, Roger H.
B.S. in F.S. 1968, Georgetown University

B

Baker, Gerald E.
B.A. 1962, North Park College and
Theological Seminary
M.A.T. 1964, Northwestern University
Ball, Gregory D.
B.A. 1967, Wabash College
Ballantyne, Richard L.
B.S.E. 1965, University of Connecticut
Balmer, Norman I.
B.S. 1968, University of Pennsylvania

Md. Banov, Alan
B.A. 1967, University of North Carolina
N.Y. at Chapel Hill
Md. Bantleon, David F.
B.A. 1968, University of Rochester
Wash. Barkley, Brian E.
B.A. 1967, University of Maryland
Barnes, Donald M.
B.S. 1965, Pennsylvania State University

| | | | |
|--|-------|---|-------------|
| Barr, Charles H. B.A. 1959, M.A. 1966, University of Washington | Md. | Blanchard, John J. B.S. 1966, Seton Hall University | Ill. |
| Barrack, Donald J. B.S. 1967, Columbia University | Md. | Blankenhaker, Robert E. B.Ch.E. 1966, University of Virginia | Va. |
| Barthold, Aubin K. B.A. 1968, Stanford University | Wash. | Blish, John M. B.A. 1966, George Washington University | D.C. |
| Bartlett, Robert A. B.A. 1966, Yale University | N.Y. | Bloom, Robert T. B.A. 1967, Hofstra University | N.Y. |
| Basheer, Baheej W. B.S. 1965, U.S. Air Force Academy | Md. | Bloomfield, Elaine I. B.A. 1967, Case Western Reserve University | Ohio |
| Baumgarten, Leon I. B.A. 1966, Pennsylvania State University | Pa. | Blouch, John W. B.A. 1962, Yale University | D.C. |
| Baxter, Gary M. B.S. 1966, Arizona State University | Ill. | Bluestein, Herman B.S. 1968, Indiana University | Va. |
| Baxter, Thomas A. B.A. 1968, Purdue University | Ind. | Blumenthal, Ronnie B.A. 1966, George Washington University | N.J. |
| Beard, R. Richardson B.B.A. 1966, George Washington University | D.C. | Blyer, Alvin P. B.A. 1966, Brooklyn College | N.Y. |
| Beaver, Richard J. B.S. 1964, U.S. Coast Guard Academy | Va. | Bode, William H. B.S. 1964, U.S. Air Force Academy | Mich. |
| Bechtel, Steven R. B.A. 1967, Tulane University of Louisiana | Va. | Bogetto, Philip D. B.S. in F.S. 1965, Georgetown University | Mich. |
| Bechtold, William M. B.S. in B.A. 1968, Georgetown University | Del. | Bogsch, Henry W. B.S. in F.S. 1966, Georgetown University | Switzerland |
| Beecroft, Joseph N. B.A. 1965, Brigham Young University | Va. | Bokat, Stephen A. B.A. 1968, Adams State College | Md. |
| Beha, William H., Jr. B.S. in E.E. 1961, University of South Carolina | Va. | Bonner, William J. B.A. 1961, Phillips University | Va. |
| Beiter, Nancy R. B.A. 1968, Manhattanville College | Fla. | Bortner, Richard B. B.A. 1968, Yale University | Md. |
| Bell, Marilyn B. B.A. 1967, Boston University | N.Y. | Borwick, Rodney J. B.A. 1967, American University | Colo. |
| Bell, Ralph L. B.S. in B.A. 1961, American University | Tenn. | Boswell, James E. B.A. 1968, Drake University | Md. |
| Beltman, Steven I. B.A. 1968, George Washington University | N.J. | Boswell, Robert C. B.A. 1966, LaSalle College | D.C. |
| Bello, Richard A. B.A. 1967, New York University | Va. | Bovee, Warren R. B.E. 1965, Vanderbilt University | Wis. |
| Bennett, Robert P. B.A. 1967, Rutgers, the State University | N.J. | Bozonelis, Basil T. B.A. 1967, Rutgers, the State University | N.J. |
| Benowitz, Robert J. B.A. 1968, American University | N.Y. | Bradford, Merrill R., Jr. B.A. 1968, Washington and Lee University | Maine |
| Berano, Bruce C. B.A. 1966, George Washington University | N.Y. | Brashares, James C. B.A. 1968, University of Virginia | Fa. |
| Berger, Melvin G. B.S. 1965, City College, New York | Md. | Braverman, Burt A. B.A. 1966, Miami University | Va. |
| Berkley, John W., Jr. B.A. 1966, North Dakota State University | N.D. | Breimayer, Joseph F. B.E.E. 1965, University of Detroit | Mich. |
| Berman, Joel B.A. 1967, Tufts University | Mich. | Breinstein, Paul T. B.A. 1967, Syracuse University | N.Y. |
| Berns, Sharon-Lee B.A. 1968, George Washington University | D.C. | Brelsford, Lloyd E. B.A. 1963, Washington State University | D.C. |
| Bernstein, Robert A. B.A. 1966, Pennsylvania State University | Md. | Brigham, Thomas S. B.A. 1966, Fresno State College | D.C. |
| Bernstein, Sidney T. B.B.A. 1966, University of Miami | Md. | Brinck, Jeffrey K. B.A. 1962, Dartmouth College | D.C. |
| Berenthal, Eric L. B.A. 1967, Columbia University | N.Y. | M.S. 1964, Stanford University | D.C. |
| Beas, Edwin H. B.A. 1966, Brigham Young University | Va. | Brody, Judy D. B.A. 1964, University of Maryland | Va. |
| Bial, Madeleine S. B.A. 1964, Miami University | D.C. | Broman, Herbert D. B.A. 1961, University of Maryland | |
| Bing, Bonnie E. B.A. 1967, George Washington University | N.C. | M.B.A. 1962, American University | R.I. |
| Biren, Richard M. B.A. 1968, George Washington University | N.Y. | Brookner, Marvin A. B.A. 1967, Brown University | Va. |
| Blackstone, Michael C. B.A. 1964, Ohio State University | Md. | Brown, David S., Jr. B.A. 1966, Syracuse University | Va. |
| Blair, Thomas A. B.A. 1968, George Washington University | Md. | Brown, Patricia L. B.A. 1966, George Washington University | Ohio |
| | | Brownfield, Charles W., Jr. B.A. 1964, Miami University | Md. |
| | | Bruce, Charles M. B.A. 1967, Washington and Lee University | |

| | | | |
|--|-------|--------------------------------------|------|
| Bruckner, Arnold D. | Ohio | Burpee, Michael B. | Pa |
| B.B.A. 1964, George Washington University | | B.A. 1968, University of Virginia | Va |
| Brummett, William R. | Conn. | Burk, Francis L., Jr. | Va |
| B.A. 1968, Middlebury College | | B.A. 1965, Dartmouth College | Va |
| Brundage, Warner F., Jr. | Md. | Burkholder, Evan A. | Pa |
| B.A. 1966, University of Southern California | | B.A. 1968, Hanover College | Pa |
| Bryan, Martha E. | Va. | Bustard, Robert D. | Ariz |
| B.A. 1966, Brenau College | | B.A. 1968, Dartmouth College | Ariz |
| Bucholtz, Roy J. | Va. | Butler, Arthur B., III | Mass |
| B.A. 1967, University of Virginia | | B.A. 1966, Trinity University | Mass |
| Buker, Gerold A., Jr. | Mass | Butler, William F. | Mich |
| B.A. 1965, Boston College | | B.A. 1968, College of the Holy Cross | Mich |
| Bullock, Charles F. | N.Y. | Byrd, Charles F. | Va |
| B.A. 1968, Bucknell University | | B.S. 1967, Wayne State University | Va |
| Burch, Richard K. | Va. | Bywater, Douglas L. | |
| B.A. 1966, Wichita State University | | B.S. 1967, University of Utah | |

C

| | | | |
|---|-------|---|-------|
| Cable, William H. | D.C. | Christopher, George E. | Md |
| B.S. 1967, University of Wisconsin | | B.S. 1952, University of Maryland | Md. |
| Calder, Eugene B. | Mich. | Cinciotta, Linda A. | N.Y. |
| B.A. 1966, Albion College | | B.S. 1965, Georgetown University | N.Y. |
| Calderwood, James A. | Md. | Clark, George E. | Del |
| B.S. 1964, University of Maryland | | B.S. 1964, University of Arizona | Del |
| Caldwell, Joseph E. | D.C. | Clark, John A., III | Va |
| B.A. 1966, Colorado College | | B.A. 1968, Fordham University | Va |
| Canover, Mark R. | Ohio | Clarkson, Charles A. | Va |
| B.B.A. 1966, Ohio University | | B.A. 1967, Princeton University | Va |
| Cant, Geoffrey D. | Md. | Clary, Matthew A., III | Minn |
| B.S. 1959, U.S. Naval Academy | | B.A. 1968, Johns Hopkins University | Minn |
| Caputo, Ralph V. | N.Y. | Cleary, John M. | Pa |
| B.A. 1966, Georgetown University | | B.A. 1965, Catholic University of America | Pa |
| Carlson, Jay L. | Wis. | Clement, Daniel J. | N.Y. |
| B.S. 1965, University of Wisconsin | | B.S. 1966, Pennsylvania State University | N.Y. |
| Carman, James C. | D.C. | Clements, Daniel M. | Texas |
| B.S. 1966, University of Utah | | B.A. 1968, University of Pennsylvania | Texas |
| Carosella, Michael E. | Va. | Click, Joanne | Md |
| B.S. (M.E.) 1966, George Washington University | | B.J. 1962, University of Texas at Austin | Md |
| Carpenter, Don S. | Pa. | Clum, John P. | N.Y. |
| B.A. 1966, Pennsylvania State University | | B.A. 1966, George Washington University | N.Y. |
| Carr, James F. | Mich. | Clyman, Jeffrey M. | Ind |
| B.S. 1968, U.S. Air Force Academy | | B.A. 1967, University of Vermont | Ind |
| Carson, Carl W. | D.C. | Coblentz, John E. | Miss |
| B.A. 1961, Drew University | | B.S. 1965, U.S. Air Force Academy | Miss |
| M.A. 1962, Tufts University | | M.A. 1966, Georgetown University | Miss |
| Carson, Edith J. | N.C. | Cocke, Charles P. | N.Y. |
| B.A. 1966, Duke University | | B.S. 1965, University of Virginia | N.Y. |
| Carter, Daniel H. | Texas | Cogan, Robert P. | Pa |
| B.S. 1962, St. Mary's University of San Antonio | | B.S.E. 1966, Cooper Union | Pa |
| Carter, David M. | Ky. | Cohen, Arthur J. | N.Y. |
| B.S. 1968, Western Kentucky University | | B.A. 1967, Franklin and Marshall College | N.Y. |
| Cathcart, Kerry L. | Iowa | Cohen, Edward B. | N.Y. |
| B.A. 1967, Drake University | | B.S. 1967, Lehigh University | N.Y. |
| Chambers, Joy S. | Ala. | Cohen, Fredric A. | N.Y. |
| B.A. 1968, George Washington University | | B.A. 1968, City College, New York | N.Y. |
| Chandler, Lawrence J. | Md. | Cohen, Richard A. | Va. |
| B.A. 1966, Boston University | | B.S. 1968, Cornell University | Va. |
| Chapuran, Ronald F. | Va. | Cohen, Richard S. | N.Y. |
| B.E.E. 1960, Marquette University | | B.A. 1968, Rutgers, the State University | N.Y. |
| Charney, Joseph P. | N.Y. | Cohen, Stuart R. | N.Y. |
| B.A. 1966, Brooklyn College | | B.S. 1967, Brooklyn College | N.Y. |
| Chemnick, Paul W. | Ariz. | Cohn, Lawrence H. | Ill |
| B.A. 1966, George Washington University | | B.A. 1968, Syracuse University | Ill |
| Chen, William J., Jr. | D.C. | Coleman, James R. | Pa |
| B.A. 1966, American University | | B.A. 1968, University of Illinois | Pa |
| Chomski, Joseph M. | N.Y. | Coles, Wilmer D., Jr. | Mass |
| B.A. 1967, George Washington University | | B.A. 1967, Swarthmore College | Mass |
| Christison, Kenneth M. | Md. | Collett, Charles W. | Pa |
| B.S. 1964, Montana State University | | B.A. 1966, George Washington University | Pa |
| M.A. 1967, George Washington University | | Collins, Alfred G. | |
| | | B.S. 1968, Pennsylvania State University | |

| | | | |
|--|-------|--|-------|
| Collins, Lynn R. B.S. 1964, Brigham Young University | Md. | Crane, John D. B.E. 1963, Yale University | Va. |
| Colten, Richard J. B.S. 1966, American University | Va. | M.S.E. 1964, University of Pennsylvania | |
| Comstock, Gary R. B.S. 1964, Brigham Young University | Va. | Craver, Roger M. B.A. 1963, Dickinson College | Pa. |
| Condit, Thomas S. B.A. 1964, Stanford University | Va. | Crawford, Arthur R. B.S. 1966, Ohio Northern University | Ohio |
| Connell, James R. B.S. 1953, Regis College, Colo. | Md. | Crews, William E. B.A. 1966, Miami University | Ohio |
| Conti, Richard A. B.A. 1967, Merrimack College | N.J. | Crummey, John E. B.A. 1962, American University | Md. |
| Coombe, John D. B.A. 1968, Williams College | Colo. | Crumrine, Clarence A. B.A. 1967, Washington and Jefferson College | Va. |
| Cooper, Barry A. B.E. 1966, City College, New York | Md. | Crystal, Jules I. B.A. 1968, University of Michigan | Ill. |
| Cooper, Peggy A. B.A. 1968, George Washington University | Ala. | Crystal, Robert G. B.A. 1968, Queens College, N.Y. | N.Y. |
| Cooper, William C. B.A. 1968, Trinity University | Texas | Culbert, Andrew C. B.A. 1966, University of New Hampshire | Mass. |
| Corriero, Marianne B.A. 1965, Mills College | N.Y. | Cunningham, Gary M. B.A. 1966, University of Michigan | Tenn. |
| Courtney, Robert F. B.A. 1968, College of the Holy Cross | Va. | Curle, Wilson B.A. 1967, University of Michigan | Mich. |
| Coy, Roderick S. B.A. 1968, Michigan State University | Mich. | Curtis, Clifton E. B.A. 1968, Michigan State University | Mich. |
| Crane, Elaine R. B.A. 1966, Vassar College | Va. | Curtis, Kenneth W. B.A. 1964, State University of New York at Buffalo | Va. |
| | | Czerwonky, James H. B.S. 1963, U.S. Naval Academy | Va. |
| B | | | |
| Bahl, James G. B.A. 1961, Brigham Young University | Va. | Devries, Robert K. B.S. 1962, U.S. Military Academy | Va. |
| Ballow, Lois J. B.A. 1964, Cornell University | Va. | M.S. 1965, Iowa State University of Science and Technology | |
| Ed.M. 1965, University of Cincinnati | | Dewald, Ronald G. B.A. 1967, Miami University | Md. |
| Daly, Michael J. B.A. 1966, Bucknell University | Minn. | Dickinson, Philip D. B.A. 1966, Franklin and Marshall College | Md. |
| Daly, Paul M. B.A. 1968, St. Louis University | N.J. | Dickinson, William W., Jr. B.A. 1968, Dickinson College | Conn. |
| Damme, Catherine J. B.A. 1966, Mount Holyoke College | Nebr. | Dictrow, Joel P. B.A. 1966, New York University | N.Y. |
| Daniels, Lawrence P. B.A. 1965, Kansas State College of Pittsburg | Va. | Dobkin, Judith F. B.A. 1965, University of Wisconsin | Ill. |
| Dappolito, Alan E. B.A. 1967, University of Maryland | Md. | Dohnal, Dennis W. B.A. 1967, Bucknell University | Md. |
| Davenport, Robert J. B.S. 1943, U.S. Military Academy | Va. | Dolan, Michael W. B.A. 1964, University of Kansas | Va. |
| M.A. in I.A. 1961, George Washington University | | Domico, Richard A. B.S. 1964, University of Southwestern Louisiana | Va. |
| Davidson, Donald R. B.A. 1968, Dartmouth College | N.Y. | Donohoe, Charles R. B.S. 1964, M.S. 1965, Ohio State University | Ohio |
| Davidson, Douglas E. B.S. in F.S. 1968, Georgetown University | N.J. | Dooling, Thomas A. B.A. 1964, Harvard University | D.C. |
| Davis, Gary V. B.A. 1968, American University | Va. | Dorris, Thomas B. B.A. 1964, Princeton University | Ind. |
| Davis, Michael R. B.S. 1965, Rochester Institute of Technology | Md. | Dorsch, Nancy R. B.A. 1953, Smith College | Md. |
| Deal, David T. B.C.E. 1966, Villanova University | Va. | Ed.M. 1955, University of Pittsburgh | |
| Dearing, Dennis A. B.S. 1968, Western Kentucky University | Ky. | Dougherty, Alfred F., Jr. B.S. 1963, U.S. Naval Academy | D.C. |
| Defour, Brian M. B.A. 1968, Georgetown University | Va. | Douglass, Alvin G., Jr. B.S. in F.S. 1968, Georgetown University | D.C. |
| Deisinger, William R. B.A. 1968, Gettysburg College | N.J. | Dowell, William J. B.A. 1966, George Washington University | Va. |
| Denny, Judith A. B.A. 1968, Louisiana Polytechnic Institute | La. | Drisko, Diana M. B.A. 1967, Northwestern University | Kans. |
| Deniet, Robert R. B.A. 1968, Georgetown University | Pa. | Dublin, Kirk A. B.A. 1968, Oakland University | D.C. |
| Detmar, Joseph H. B.A. 1966, LaSalle College | Va. | | |

98 NATIONAL LAW CENTER

| | | | |
|---|------|---|------|
| Duboff, Joel | N.Y. | Dunbar, Craig B. | Md. |
| B.A. 1968, Queens College, N.Y. | | B.A. 1966, Texas A&M University | Va. |
| Duff, James T. | Md. | Dunn, Charles C. | N.Y. |
| B.B.A. 1966, George Washington University | | B.A. 1965, University of Notre Dame | |
| Duffield, Edward H. | Md. | Dunsay, Jessica A. | |
| B.S.E. 1965, University of Michigan | | B.A. 1968, George Washington University | |
| Dugger, John A. | D.C. | | |
| B.S. 1945, U.S. Naval Academy | | | |
| M.A. 1960, American University | | | |

E

| | | | |
|--|--------|--|-------|
| Early, Allan B. | N.J. | Efroymson, Mary A. | Ind. |
| B.A. 1967, Denison University | | B.A. 1965, Wellesley College | N.Y. |
| Eaton, Allen T. | Va. | Ehrlich, Joseph B. | N.Y. |
| B.S. 1956, West Virginia State College | | B.A. 1968, Syracuse University | |
| Ebel, John S. | Va. | Eisenberg, Israel N. | D.C. |
| B.S. 1966, Washington University | | B.A. 1968, Hunter College | |
| Echter, Martin S. | Conn. | Eisenberg, Ronald A. | N.Y. |
| B.A. 1967, Dartmouth College | | B.A. 1964, Case Western Reserve University | |
| Edgar, George L. | Fla. | Eisenbud, Robert E. | N.Y. |
| B.A. 1963, B.M.E. 1964, Dartmouth College | | B.A. 1965, Washington College | |
| Edwards, Johnny P. | D.C. | Elbaum, Saul | N.Y. |
| B.A. 1964, Washington and Lee University | | B.E.E. 1965, City College, New York | |
| Edwards, Monte R. | Md. | Elson, Barry R. | Conn. |
| B.S. in M.E. 1967, University of Maryland | | B.S. 1967, New York University | |
| Edwards, Thomas C. | Calif. | Emanuel, Richard | Va. |
| B.A. 1968, University of California, Los Angeles | | B.A. 1967, University of Connecticut | |
| | | English, John W. | |
| | | B.A. 1966, University of Michigan | |

F

| | | | |
|---|------|--|--------|
| Fagin, Darryl H. | Md. | Fogelman, Arthur H. | D.C. |
| B.A. 1968, Olivet College | | B.S. 1951, Lehigh University | D.C. |
| Farnham, John D. | D.C. | Foley, Heather S. | N.Y. |
| B.A. 1958, University of Minnesota | | B.A. 1961, Pembroke College | |
| Farquhar, Elizabeth H. | D.C. | Foote, Francis W., II | Canada |
| B.A. 1961, Guilford College | | B.A. 1967, Washington and Lee University | |
| Fay, Donald J. | N.J. | Foote, John A. | Md. |
| B.A. 1968, Mount St. Mary's College, Md. | | B.A. 1966, University of British Columbia | |
| Fernandez, Gary R. | D.C. | Foran, James V. | Md. |
| B.A. 1968, University of Maryland | | B.A. 1968, University of Maryland | |
| Feuerzeig, Henry L. | Md. | Foran, John R. | Mich. |
| B.S. 1962, University of Wisconsin | | B.A. 1968, University of Maryland | |
| Finegold, Sharon A. | D.C. | Forburger, Dean C. | N.J. |
| B.A. 1967, University of California, Berkeley | | B.A. 1966, University of Michigan | |
| Fineman, S. D. | Pa. | Forman, Mark A. | N.Y. |
| B.A. 1967, American University | | B.S. 1967, Pennsylvania State University | |
| Fingerhut, Michael B. | D.C. | Forney, Michael A. | Va. |
| B.A. 1968, George Washington University | | B.S. 1968, Cornell University | |
| Fiori, Patricia A. | Pa. | Fortunato, Stephen J. | N.Y. |
| B.A. 1967, Goucher College | | B.A. 1965, Providence College | |
| Fishman, Theodore V. | N.J. | Fowkes, Richard O. | Calif. |
| B.A. 1968, George Washington University | | B.A. 1968, New York University | |
| Fitzmorris, Kevin T. | Va. | Fox, Brenda L. | D.C. |
| B.A. 1967, Georgetown University | | B.A. 1968, University of California, Los Angeles | |
| Fitzpatrick, James F. | Md. | Frankel, Roger I. | N.Y. |
| B.A. 1968, Duquesne University | | B.A. 1968, Brandeis University | |
| Fleet, Leslie G. | Va. | Franklin, Fred J. | Md. |
| B.A. 1965, American University | | B.A. 1968, University of Massachusetts | |
| Fleischaker, Marc L. | Ky. | Freed, Charles N. | Tenn. |
| B.S. 1967, University of Pennsylvania | | B.S. 1959, Pennsylvania State University | |
| Fleischer, Charles H. | N.Y. | Freedman, Edward R. | D.C. |
| B.A. 1966, University of Rochester | | B.S.E. 1966, University of Michigan | |
| Foelak, Morton | Va. | Freischlag, Mark D. | D.C. |
| B.S. 1953, Brooklyn College | | B.A. 1968, University of Rochester | |
| Fogel, Jo B. | Md. | French, Jay T. | |
| B.S. 1966, Duke University | | B.A. 1965, Yale University | |
| Fogelberg, Carl R. | D.C. | | |
| B.A. 1963, Dartmouth College | | | |

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| French, Philip M. B.S. 1966, Union College, N.Y. | Ohio | Friedman, Sheldon E. B.A. 1967, Miami University | Va. |
| Friedman, Dana E. B.A. 1968, University of Michigan | N.Y. | Frischkorn, Allen R. B.A. 1967, Pennsylvania State University | Va. |
| Friedman, Marc S. B.A. 1968, Johns Hopkins University | N.J. | Fromme, Joseph T., II B.A. 1968, Denison University | Va. |
| Friedman, Robert G. B.S. 1967, New York University | N.Y. | Fulbruge, Charles R., III B.S. in F.S. 1968, Georgetown University | N.Y. |
| Friedman, Rodney M. B.A. 1968, Hobart College | Fla. | Fullerton, Judith A. B.A. 1966, Vassar College | Okla. |

G

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|---|-------|---|--------|
| Gailor, Frank R. B.S. 1966, South Dakota State University | Va. | Goldman, Howard S. B.S. 1965, University of Wisconsin | N.Y. |
| Gallagher, Robert P. B.A. 1968, George Washington University | Pa. | Goldsand, Richard I. B.A. 1966, George Washington University | N.Y. |
| Gardner, Joel F. B.A. 1966, University of Massachusetts | Mass. | Goldsmith, Philip R. B.S. 1966, Pennsylvania State University | D.C. |
| Gardner, Robert K. B.A. 1967, Brigham Young University | D.C. | Goldstein, Bruce B.A. 1966, University of North Carolina at Chapel Hill | S.C. |
| Garfinkel, Steven B.A. 1967, George Washington University | Md. | Gonzales, John F. B.S. 1968, Louisiana State University | La. |
| Garrison, David F. B.A. 1965, Amherst College | Mass. | Gordon, Alan H. B.S. 1968, Columbia University | S.C. |
| Garvic, John D. B.E.E. 1966, Ohio State University | Ohio | Goshorn, Kenneth W. B.A. 1966, Carleton College | Pa. |
| Gayle, David M. B.S. 1965, Case Western Reserve University | Md. | Gossens, Paul J. B.A. 1962, Catholic University of America | Wis. |
| Ge, Richard H. B.S. 1967, Rutgers, the State University | N.J. | Goulding, James E. B.S. 1965, Brigham Young University | Va. |
| Gee, Robert S. B.A. 1968, Bethany College, W. Va. | N.Y. | Gourley, Tudor S., Jr. B.S. 1968, New Haven College | Va. |
| Gelman, Robert S. B.A. 1966, Brooklyn College | N.J. | Grabelle, Paul M. B.A. 1968, Rutgers, the State University | N.J. |
| Geltman, Edward A. B.A. 1968, Franklin and Marshall College | Ill. | Graber, Charles S. B.A. 1967, The Citadel | S.C. |
| Gerber, Thomas J. B.A. 1966, Northwestern University | Ill. | Grabow, Michael D. B.A. 1968, George Washington University | N.J. |
| Getz, William T. B.A. 1968, Northwestern University | Va. | Graev, Lawrence G. B.A. 1966, Cornell University | N.Y. |
| Gibbons, John M. B.S. 1962, University of Houston | Pa. | Grebow, Ralph H. B.A. 1967, George Washington University | N.J. |
| Gillingham, Stephen T. B.A. 1966, Juniata College | Utah | Green, Howard R. B.A. 1964, University of California, Berkeley | Va. |
| Gilson, Douglas E. B.A. 1968, University of Washington | Md. | Green, Robert L. B.A. 1967, Johns Hopkins University | Va. |
| Glasgow, Paul T. B.A. 1968, University of Maryland | Oreg. | Greenberg, Roger E. B.A. 1966, University of Maryland | Md. |
| Glasgow, Robert E. B.A. 1966, George Washington University | Md. | Gregory, Stephen D. B.A. 1968, Nevada Southern University | Nev. |
| Glennon, Elizabeth Q. B.A. 1954, Pomona College | Kans. | Grimm, John F. B.S. 1961, Fordham University | Md. |
| Glickman, Danny R. B.A. 1966, University of Michigan | Nev. | Grossman, Martin L. B.A. 1967, University of Pennsylvania | N.J. |
| Godwin, Steven L. B.S. 1966, Brigham Young University | N.Y. | Grove, Jeffrey W. B.A. 1965, Juniata College | Md. |
| Gogolak, Charles P. B.A. 1966, Princeton University | Fla. | Gruening, Clark S. B.A. 1965, University of Oregon | Alaska |
| Gold, Steven B. B.A. 1968, George Washington University | N.Y. | Gundel, Carol A. B.A. 1968, Wilson College | Pa. |
| Goldberg, Michael J. B.A. 1968, University of Kansas | Del. | Gurne, Patricia D. B.A. 1965, MacMurray College | Pa. |
| Goldberg, Steven D. B.A. 1968, University of Delaware | D.C. | Guthman, David H. B.A. 1963, California State College at Long Beach | Md. |
| Goldberg, Theodore B.A. 1953, Brooklyn College | N.Y. | M.P.A. 1965, University of Southern California | |
| Goldman, Edward M. B.A. 1968, George Washington University | Va. | | |
| Goldman, Greer S. B.A. 1966, Cornell University | | | |

H

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| Haas, Steven C. B.A. 1967, Syracuse University | N.Y. | Hebb, David D. B.A. 1965, Washington and Jefferson College | Mass. D.C. |
| Haid, Donald J. B.A. 1950, Emory University | Va. | Heitman, Donald H. B.A. 1968, Georgetown University | Ohio |
| Hall, David W. B.A. 1961, Yale University | D.C. | Henderson, Nelson T. B.A. 1963, Ohio State University | Md. |
| Halper, Robert B.A. 1939, University of Illinois B.Ch.E. 1950, New York University M.S. in Ch.E. 1958, Newark College of Engineering | Md. | Hendricks, William C., III B.A. 1966, University of North Carolina at Chapel Hill | Ill. |
| Halpern, Melvin L. B.S. 1966, City College, New York | N.Y. | Hennessey, Gilbert H., III B.A. 1966, Beloit College | Texas |
| Ham, Richard J. B.A. 1966, George Washington University | Md. | Henry, Don B.A. 1968, Texas Technological College | N.Y. |
| Hamersley, James U. B.A. 1965, University of Utah M.A. 1967, University of Denver | Idaho | Hertzberg, Michael A. B.A. 1966, Colgate University | N.C. |
| Hamm, John W. B.A. 1967, Denison University | Ohio | Hickey, Mellie H. B.A. 1967, Sweet Briar College | Va. |
| Hammond, Thomas W., III B.A. 1966, George Washington University | Va. | Hilst, Ronald P. B.S. 1967, University of Illinois | Md. |
| Hampshire, Thomas R. B.S.E. 1967, Stevens Institute of Technology | N.J. | Himmelfarb, Carol L. B.A. 1968, Michigan State University | Calif. |
| Handleman, Aaron L. B.A. 1968, Marietta College | Conn. | Hines, John T. B.A. 1964, Stanford University | N.Y. |
| Hansen, John R. B.S. 1962, Iowa State University of Science and Technology M.B.A. 1964, Columbia University | Nebr. | Hirshon, Sheldon I. B.S. 1968, New York University | Iowa |
| Hansen, John R. B.A. 1965, George Washington University | W.Va. | Hoak, David A. B.B.A. 1968, University of Iowa | Md. |
| Hanson, Bruce H. B.S. 1967, University of Wisconsin | Va. | Hodge, William H. B.S. in E.E. 1963, University of Arkansas M.S. 1964, University of New Mexico | Pa. |
| Hanssen, Henry R., Jr. B.S. 1968, U.S. Naval Academy | S.C. | Hoffman, Gary M. B.S. in E.E. 1967, University of Pennsylvania | Va. |
| Harding, Don L. B.B.A. 1964, George Washington University | Idaho | Hoffman, James R. B.S. 1957, University of Tulsa | Va. |
| Harmson, Stephen M. B.S. 1966, University of Utah | Utah | Holdridge, Christopher B.A. 1964, University of Texas at Austin | N.Y. |
| Harris, Charles B. B.S. 1967, Nevada Southern University | Nev. | Hollander, Charles A. B.A. 1966, University of Pittsburgh | N.Y. |
| Harris, Randy A. B.A. 1967, Grinnell College | Ill. | Hollins, Michael S. B.A. 1966, Washington and Jefferson College | D.C. |
| Harrison, Bruce S. B.A. 1967, Case Western Reserve University | Conn. | Holloran, Michael J. B.A. 1966, George Washington University | Md. |
| Hart, Bruce B. B.S. 1962, Western Michigan University | Md. | Holtz, Larry R. B.A. 1967, Chaminade College of Honolulu | S.D. |
| Hartelius, Channing J. B.A. 1968, University of Montana | Mont. | Holum, John D. B.S. 1963, Northern State College | Wis. |
| Harter, Alan R. B.S. 1958, Utah State University of Agriculture and Applied Science | Va. | Honig, Steven M. B.A. 1968, University of Wisconsin | Mass. |
| Harter, Franklin C. B.S. in E.E. 1963, University of Michigan | Va. | Howe, Philip M. B.A. 1967, College of the Holy Cross | Va. |
| Hartman, Gary E. B.A. 1968, Middlebury College | Pa. | Huber, William R. B.S. 1932, U.S. Military Academy M.B.A. 1950, University of Michigan | Pa. |
| Hartman, Pierre M. B.A. 1958, University of Colorado | Va. | Huberfeld, Harold B.S. in E.E. 1965, Drexel Institute of Technology | Va. |
| Harwin, Robert B. B.A. 1967, Miami University | N.Y. | Hume, John P. B.B.A. 1964, University of Notre Dame | Va. |
| Hassid, Jack B.A. 1967, Hofstra University | D.C. | Hunt, Roger L. B.A. 1966, Brigham Young University | D.C. |
| Hausfeld, Michael D. B.A. 1966, Brooklyn College | Va. | Hunter, Raymond M. B.A. 1966, Stanford University | Ohio |
| Hawkins, Carol T. B.A. 1966, Skidmore College | Hawaii | Hussar, Ted W. B.S. 1968, Bowling Green State University | Md. |
| | | Hutt, Martin J. B.A. 1967, University of Maryland | |

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| Ingraham, Andrew C. B.A. 1968, St. Lawrence University | Conn. | Isaett, William E. B.S. 1966, University of Nevada | Nev. |
| Inouye, Ronald N. B.A. 1967, Brigham Young University | Utah | | |
| Jacobs, Alan S. B.A. 1967, University of Pennsylvania | N.Y. | Johnson, Wayne M. B.A. 1965, University of Maine | Maine |
| Jacobs, Michael J. B.S. 1963, U.S. Coast Guard Academy | Md. | Johnston, John H. B.A. 1967, American University | Va. |
| James, Robert L. B.A. 1966, Cornell University | Md. | Jones, Christian B. B.A. 1967, Vanderbilt University | Ga. |
| Jani, Jerome J. B.A. 1963, Catholic University of America | Md. | Jones, Richard F. B.A. 1959, Maryville College | |
| Jensen, Douglas V. B.A. 1966, Brigham Young University | Mich. | Jorgensen, Edwin H. B.A. 1968, George Washington University | Iowa |
| Jeweler, Bernard P. B.A. 1967, University of Maryland | Md. | Joselow, Robert B. B.A. 1966, New York University | N.Y. |
| Johnson, James A. R. B.A. 1960, Occidental College | D.C. | Josten, Robert E. B.A. 1964, Morningside College | D.C. |
| Johnson, James W., Jr. B.S. in E.E. 1963, Howard University | Va. | Joy, Stephany L. B.S. 1963, Le Moyne College | N.Y. |
| Johnson, Robert A. B.A. 1957, M.A. 1961, Marshall University | D.C. | M.A. 1965, George Washington University | |
| Johnson, Susan L. B.S. 1963, University of Pennsylvania | Mass | Jungblut, Edith J. B.A. 1953, Mount Mercy College, Pa. | Pa. |
| Kaczynsky, Tobey W. B.A. 1966, Harvard University | D.C. | Keeney, Raymond A. B.A. 1965, Yale University | Conn. |
| Kahn, Bertrand J. B.A. 1966, George Washington University | N.Y. | Keith, Sharon S. B.A. 1966, University of Akron | Ohio |
| Kahn, William A. B.S. 1959, University of Pennsylvania | Md. | Kelly, Sheila M. B.A. 1964, Catholic University of America | Wash. |
| Kalish, William B.A. 1967, University of Pittsburgh | N.J. | Kelly, William F. B.S. 1954, U.S. Naval Postgraduate School | Md. |
| Kalfer, Paul J. B.A. 1966, Syracuse University | Va. | Kelly, William P. B.A. 1966, University of the South | D.C. |
| Kalmanek, Joan M. B.A. 1966, University of Illinois | Ill. | Kenda I, Peter W. B.A. 1967, Temple University | Pa. |
| Kane, John F. B.A. 1967, College of William and Mary | Va. | Kent, James L. B.A. 1968, George Washington University | Md. |
| Kanengiser, Jay R. B.A. 1967, Columbia University | N.J. | Kernan, James E. B.A. 1968, Boston College | Va. |
| Kardis, Phillip J. B.S. 1965, University of Illinois | Va. | Kessler, Edward J. B.S. (E.E.) 1967, George Washington University | Va. |
| Karrat, Anthony J. B.A. 1967, University of Notre Dame | N.Y. | Kidwell, Harold K. B.A. 1968, George Washington University | Va. |
| Kashinski, Albert A. B.A. 1963, B.S. 1964, University of Notre Dame | Ill. | Kile, Bradford E. B.M. E. 1966, Ohio State University | D.C. |
| Kassenoff, Melvyn M. B.A. 1964, Columbia University | Md. | Kiley, Thomas D. B.S. 1965, Pennsylvania State University | Pa. |
| K.S. 1966, Massachusetts Institute of Technology | | Killworth, Richard A. B.S. 1965, M.A. 1966, Purdue University | Va. |
| Karenburg, Philip C. B.A. 1968, University of North Carolina at Chapel Hill | Va. | Kimble, James L. B.S. 1968, Denison University | Md. |
| Katz, Craig D. B.A. 1967, University of North Carolina at Chapel Hill | N.J. | Kingsley, David J. B.A. 1968, Monmouth College, N.J. | D.C. |
| Katz, Martin V. B.A. 1967, Queens College, N.Y. | N.Y. | Kirby, John E. B.B.A. 1968, George Washington University | D.C. |
| Katberg, Robert B.A. 1967, Brooklyn College | N.Y. | Kirtland, John C. B.S. 1961, U.S. Naval Academy | D.C. |
| Kaufman, David J. B.A. 1968, City College, New York | N.Y. | Klasic, Donald F. B.A. 1966, Youngstown University | Pa. |
| Kaufman, Howard J. B.S. 1966, Cornell University | N.Y. | Kleeman, Nancy J. B.A. 1967, Wellesley College | Md. |
| Kaye, Robert N. B.S. 1967, New York University | N.Y. | Klein, Gary S. B.A. 1968, Queens College, N.Y. | N.Y. |
| | | Kleinman, Carol C. B.A. 1966, Northwestern University | Va. |

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|---|-------|---|-------|
| Kleman, Richard D. | Va. | Kramer, Bruce S. | N.J. |
| B.A. 1962, Duquesne University | | B.A. 1966, Washington and Lee University | N.Y. |
| Klinefelter, Michael R. | Pa. | Kramer, Michael A. | N.Y. |
| B.A. 1964, Dartmouth College | | B.A. 1967, Syracuse University | N.Y. |
| Knight, Louise O. | Md. | Kramer, Robert A. | Va. |
| B.A. 1966, Wellesley College | | B.A. 1968, Queens College, N.Y. | |
| Knop, John R. | Ind. | Kramer, Theodore D. | Md. |
| B.A. 1966, Indiana University | | B.B.A. 1967, University of Michigan | |
| Koch, Charles H., Jr. | Md. | Kramon, James M. | Pa. |
| B.A. 1966, University of Maryland | | B.S. 1966, Carnegie-Mellon University | |
| Koff, Gail J. | N.Y. | Kresman, Marshall I. | D.C. |
| B.A. 1967, University of California, Berkeley | | B.S. 1966, Drexel Institute of Technology | |
| Kogan, Jason D. | Conn. | Kress, Alan H. | N.Y. |
| B.A. 1966, Pennsylvania State University | | B.A. 1968, New York University | |
| Koons, Charles A. | Conn. | Krinsky, Barry H. | Md. |
| B.A. 1965, Cornell University | | B.A. 1966, Brooklyn College | |
| Kopecki, Alan E. | N.J. | Krosin, Kenneth F. | Md. |
| B.M.E. 1966, Villanova University | | B.S.E. 1966, Princeton University | |
| Koppel, James G. | N.J. | M.S.E. 1967, University of Michigan | Md. |
| B.A. 1966, University of Wisconsin | | Krueger, Frank K., Jr. | Nebr. |
| Koransky, Ralph J. | Ill. | B.A. 1967, Johns Hopkins University | |
| B.S. 1968, Purdue University | | Kruse, James R. | Conn. |
| Kornbau, Anne M. | Md. | B.A. 1967, Nebraska Wesleyan University | |
| B.S. 1966, Drexel Institute of Technology | | Kweskin, Edward M. | |
| Kosloff, Alan M. | Conn. | B.A. 1968, University of Pennsylvania | |
| B.A. 1968, University of Connecticut | | | |
| Kovey, Myra G. | D.C. | | |
| B.A. 1965, Barnard College | | | |

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|--|-------|---|--------|
| Lager, Scott L. | Md. | Levin, Samuel M. | Va. |
| B.A. 1967, University of Maryland | | B.A. 1966, George Washington University | Md. |
| Lall, Prithvi C. | D.C. | Levine, Robert E. | Va. |
| B.S. 1950, M.S. 1954, Panjab University, India | | B.A. 1967, George Washington University | |
| Ph.D. 1962, Oregon State University | | Levine, Theodore A. | Ill. |
| Lamb, Eric M. | Ky. | B.A. 1966, Rutgers, the State University | |
| B.S. 1968, University of Louisville | | Levy, Charles S. | D.C. |
| Lamb, Raymond P. | Va. | B.A. 1967, Boston University | |
| B.A. 1967, Dartmouth College | | Lewin, Stuart E. | D.C. |
| Land, Douglas S. | N.Y. | B.A. 1966, Indiana University | |
| B.A. 1967, Boston University | | Lewis, Elise A. | Md. |
| Landman, Steven R. | Conn. | B.A. 1967, University of Pennsylvania | |
| B.A. 1967, Dickinson College | | Lewis, Sandra J. | Ga. |
| Laskowski, Robert C. | Mich. | B.A. 1968, University of Maryland | |
| B.A. 1968, University of Michigan | | Lichtenstein, Marshall H. | N.Y. |
| Latimer, Kenneth A. | Ill. | B.A. 1966, University of North Carolina at Chapel Hill | |
| B.S. 1966, University of Wisconsin | | Lieber, Michael S. | Va. |
| Lawrence, Stanton T. | Va. | B.A. 1967, Michigan State University | |
| B.S. 1967, Colorado State University | | Lieberman, Carolyn B. | Pa. |
| Lawson, Edward F. | D.C. | B.A. 1968, University of Minnesota | |
| B.A. 1968, Howard University | | Lieberman, Erik R. | Md. |
| Lawson, Nancy A. | Ark. | B.A. 1967, University of Pittsburgh | |
| B.A. 1968, Indiana University | | Liekweg, Charles B., III | Calif. |
| Leary, Theodore M., Jr. | Mass. | B.A. 1966, Catholic University of America | |
| B.A. 1966, Harvard University | | Link, John F. | N.Y. |
| Leedom, Charles M., Jr. | Ind. | B.S. 1968, University of New Hampshire | |
| B.S. 1966, Purdue University | | Link, Thomas R. | Conn. |
| Lelong, Marion P. | Va. | B.A. 1968, Georgetown University | |
| B.S. 1949, Virginia Polytechnic Institute | | Lipson, Michael H. | Colo. |
| Lent, Peter D. | Md. | B.A. 1966, University of Connecticut | |
| B.A. 1968, George Washington University | | Little, Michael J. | Va. |
| Lesser, Wayne L. | N.J. | B.A. 1964, University of Notre Dame | |
| B.A. 1966, Lafayette College | | Loeb, Milford, II | Md. |
| Lessy, Roy P., Jr. | Pa. | B.A. 1968, California Western University | |
| B.A. 1966, Franklin and Marshall College | | Loftus, William R. | Md. |
| Letson, Laurence R. | Va. | B.S. 1967, Utah University of Agriculture and Applied Science | |
| B.S. in M.E. 1963, University of Nebraska | | Logan, Robert J. | Md. |
| Leventhal, Robert C. | N.J. | B.S. 1966, University of Utah | |
| B.A. 1965, Lafayette College | | Longest, Darrel I. | |
| Levie, Richard A. | N.J. | B.A. 1966, Georgetown University | |
| B.A. 1966, Dickinson College | | | |

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|--|-------|--|------|
| Loss, Ira S. B.A. 1966, University of Connecticut | Conn. | Luckett, Jackson R. B.Gen.Ed. 1964, University of Nebraska at Omaha | D.C. |
| Loud, George A. B.S. 1965, Christian Brothers College | Tenn. | Lundy, Joseph R. B.A. 1962, Princeton University | D.C. |
| Louiselle, Bruce M. B.A. 1965, George Washington University | Va. | Lunsford, John K. B.A. 1966, Olivet Nazarene College | Md. |
| Love, Daryll N. B.A. 1967, University of Minnesota | D.C. | Lurie, Mark I. B.A. 1966, Brown University | Md. |
| Low, Susan A. B.A. 1968, Skidmore College | Md. | Lux, Laurence G. B.S. 1959, University of Wisconsin | Va. |
| Luber, Michael I. B.A. 1966, Pennsylvania State University | Pa. | Lyon, Charles B. B.S. 1967, University of Oklahoma | D.C. |
| Lucha, Lorin D. B.B.A. 1968, George Washington University | D.C. | Lyons, John F. B.A. 1968, Williams College | Mass |

M

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|--|--------|--|-----------|
| Mack, Peter G. B.S. 1968, Marquette University | Conn. | Mayfield, William B. B.A. 1966, Yale University | Ga. |
| Mackie, Alexander W. B.A. 1967, Claremont Men's College | Oreg. | Mazor, Leonard M. B.A. 1967, Dartmouth College | N.Y. |
| Macrae, Marion M. B.A. 1967, Sweet Briar College | Va. | McCaffrey, Robert L., Jr. B.A. 1966, Colgate University | D.C. |
| Maddex, Robert I. B.A. 1965, George Washington University | D.C. | McCarthy, John F., III B.A. 1967, Cornell University | Va. |
| Magnone, Joseph R. B.S. 1965, University of Pittsburgh | Va. | McCollum, Douglass J. B.A. 1967, Duke University | D.C. |
| Mahoney, Thomas F. B.A. 1967, Fordham University | N.Y. | McCormack, Kevin E. B.B.A. 1965, George Washington University | Va. |
| Malandra, Joseph, Jr. B.A. 1962, University of Maryland | Calif. | McCoy, Lynne C. B.A. 1966, Goucher College | D.C. |
| Mancuso, Robert J. B.A. 1968, Georgetown University | N.Y. | McLaughlin, John J., Jr. B.S. 1964, U.S. Merchant Marine Academy | Md. |
| Mangels, Robert E. B.A. 1965, Pennsylvania State University | Md. | McNamara, Harlow J. B.S. 1967, Brigham Young University | Va. |
| Mann, John B. B.A. 1967, Duke University | Va. | McNett, John C. B.S. 1967, Purdue University | Md. |
| Manoungtan, David E. B.A. 1966, Dickinson College | Ill. | Mechling, James E. B.S. 1940, Haverford College | Va. |
| Mansfield, Louise I. B.A. 1968, University of Colorado | D.C. | Mednick, Jeffrey S. B.S. in M.E. 1965, Drexel Institute of Technology | Va. |
| Marcus, Richard I. B.A. 1967, University of Pennsylvania | Md. | Meisel, Michael S. B.A. 1966, Miami University | Va. |
| Marcy, Eric B. B.A. 1966, George Washington University | Va. | Meister, Stuart G. B.A. 1965, Westminster College, Mo. | Okla. |
| Marzeion, Stephen G. B.A. 1967, Mount St. Mary's College, Md. | N.J. | Meltzer, Harvey R. B.S. 1963, University of Florida | Md. |
| Markman, David J. B.A. 1968, George Washington University | N.Y. | Mendenhall, Gregory B. B.A. 1968, Brigham Young University | Utah |
| Marks, Robert S. B.A. 1966, Brown University | N.Y. | Meredith, Ronald E. B.A. 1967, Georgetown University | Ky. |
| Marrus, Alan D. B.A. 1967, Brooklyn College | N.Y. | Meyers, Herbert D. B.A. 1968, University of Miami | N.Y. |
| Martin, Allan A. B.B.A. 1966, City College, New York | N.Y. | Meyers, Peter H. B.A. 1968, Marietta College | N.Y. |
| Martin, Roland E., Jr. B.S. 1962, University of Maryland | Va. | Miano, Thomas P. B.A. 1966, Providence College | Conn. |
| Martin, Roy I. B.B.A. 1966, Adelphi University | N.Y. | Michael, Robert R. B.A. 1968, George Washington University | Md. |
| Maratollo, Frank B.A. 1967, City College, New York | N.Y. | Michaels, Richard B.A. 1964, M.A. 1967, American University | Va. |
| Massie, William J., Jr. B.S. 1968, Morehouse College | Conn. | Michaud, Frederick G. B.S. 1968, Lafayette College | N.Y. |
| Mattingly, James V. B.A. 1966, George Washington University | Md. | Michel, Theodore A. B.A. 1968, Hobart College | Hong Kong |
| Matz, Timothy B. B.A. 1966, University of Virginia | D.C. | Michl, Paul R. B.S. in Ch. E. 1968, Ohio State University | Ohio |
| May, Jerry C. B.A. 1968, University of California, Riverside | Md. | Midgley, James W. B.A. 1968, Case Western Reserve University | Ohio |
| May, Roger L. B.A. 1967, University of Rochester | Va. | Mika, Frank A. B.A. 1963, Washington and Jefferson College | Pa. |

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| Miller, Alan H. | N.Y. | Morgan, Paul L. | Va. |
| B.A. 1968, University of Pennsylvania | | B.S. 1962, Frostburg State College | Del. |
| Miller, Conway D. | Va. | Morley, William E. | |
| B.A. 1963, Davis and Elkins College | | B.A. 1964, University of Maryland | |
| Miller, Jan W. | Va. | M.B.A. 1966, George Washington University | Pa. |
| B.S. 1968, Georgetown University | | Morris, Samuel W., Jr. | |
| Miller, Joel B. | N.Y. | B.A. 1966, Harvard University | Va. |
| B.A. 1967, Adelphi University | | Morrison, Lawrence W. | |
| Miller, John H. | Va. | B.A. 1960, George Washington University | Md. |
| B.S. 1960, University of Missouri | | Morrison, Steven K. | |
| Miller, Paul R. | Va. | B.A. 1958, University of Pennsylvania | D.C. |
| B.S. 1960, Kent State University | | Mortrud, David L. | |
| Miller, Ronald M. | Md. | B.A. 1963, Augsburg College | N.Y. |
| B.A. 1968, Ohio State University | | Moscato, Anthony C. | |
| Miller, Warren L. | N.Y. | B.A. 1967, Columbia University | Va. |
| B.A. 1966, American University | | Moser, William R. | |
| Millsbaugh, Stephen J. | D.C. | B.S. 1967, University of Virginia | Md. |
| B.A. 1967, American University | | Moss, Ambler H., Jr. | |
| Mintz, Herbert H. | N.Y. | B.A. 1960, Yale University | Md. |
| B.Ch.E. 1966, Cooper Union | | Mossman, Boyd P. | |
| Mintz, Richard L. | Conn. | B.S. 1965, U.S. Air Force Academy | D.C. |
| B.A. 1968, University of Michigan | | Mossman, Frances I. | |
| Mitchell, Robert B., Jr. | D.C. | B.A. 1957, University of Hawaii | N.Y. |
| B.S. 1957, Lehigh University | | Muldoon, Kenneth S. | |
| Mones, Bruce E. | Md. | B.A. 1966, Brown University | Va. |
| B.A. 1967, Franklin and Marshall College | | Mullins, Dennis P. | |
| Montgomery, Frederick L. | Md. | B.A. 1959, Columbia University | Pa. |
| B.A. 1962, University of Arizona | | Mulloy, Patrick A. | |
| M.A. in Govt. 1965, George Washington University | | B.A. 1962, King's College, Pa. | N.J. |
| Moore, Paul A. | N.Y. | Munter, Harold G. | Ohio |
| B.A. 1967, Franklin and Marshall College | | Murley, James F. | |
| Moore, Philip L. | Maine | B.A. 1968, Denison University | N.Y. |
| B.S. 1967, Bucknell University | | Murtagh, Brian M. | |
| Morgan, Gregory O. | Va. | B.S. 1968, Georgetown University | Md. |
| B.A. 1967, George Washington University | | Myshin, Amil N. | |
| | | B.A. 1968, Washington and Jefferson College | |

N

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| Nardi, Henry J. | Pa. | Newman, Alan L. | Md. |
| B.A. 1965, Lehigh University | | B.S. in E.E. 1965, University of Maryland | N.Y. |
| Nathan, Harvey J. | N.Y. | Nickel, William F., III | |
| B.A. 1967, Brooklyn College | | B.A. 1968, Johns Hopkins University | Md. |
| Naveen, Ronald S. | Pa. | Nielsen, Kris R. | Va. |
| B.A. 1967, University of Pennsylvania | | B.S. 1967, Princeton University | |
| Neary, John M. | Va. | Niro, Raymond P. | Va. |
| B.S. 1966, C.W. Post College | | B.S. 1964, University of Pittsburgh | |
| Nelson, Paul G. | N.Y. | Novenstein, Evan M. | Pa. |
| B.A. 1966, Colgate University | | B.A. 1968, Columbia University | |
| Nelson, Richard C. | Mass. | Nudelman, Barry | N.Y. |
| B.A. 1966, Clark University | | B.A. 1968, University of Pittsburgh | |
| Nesland, James E. | S.D. | Nussbaum, Thomas P. | |
| B.A. 1966, University of Denver | | B.A. 1967, Hamilton College | |
| Newendorp, Terry A. | Ind. | | |
| B.S. in Ch. E. 1966, Purdue University | | | |

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| Ochis, Robert | D.C. | O'Rourke, Charles L. | Va. |
| B.S. 1964, M.S. in E.E. 1966, Massachusetts Institute of Technology | | B.S. 1959, M.B.A. 1961, Stanford University | |
| O'Connor, David F. | D.C. | Orr, Neal M. | Pa. |
| B.A. 1968, Vanderbilt University | | B.A. 1965, American University | |
| Ogilvie, Lee M. | D.C. | Osborn, William C. | Ohio |
| B.A. 1966, Antioch College | | B.A. 1966, Princeton University | |
| Oliver, Edward F. | Va. | Osnowitz, Samuel | Va. |
| B.S. 1942, California Maritime Academy | | B.B.A. 1968, University of Toledo | |
| Ollman, Robert C. | N.Y. | Ostby, Bryn R. | Md. |
| B.S. 1966, Colgate University | | B.A. 1964, St. Olaf College | |
| Oppman, T. Rodney | Ohio | Oster, Warren | |
| B.A. 1965, Princeton University | | B.A. 1968, University of Maryland | |

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| Ostok, Elaine B. B.A. 1967, George Washington University | N.J. | Ottenburg, Ray B.S. 1968, Kansas State University of Agriculture and Applied Science | D.C. |
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| Pagano, John J. B.A. 1967, Bucknell University | Md. | Persun, Lloyd R. B.A. 1968, Dickinson College | Va. |
| Palan, Perry B.S. in E.E. 1965, Washington University | Mo. | Peters, Mary E. B.A. 1967, Rhode Island College | D.C. |
| Palmer, Thomas C. B.A. 1966, Howard University | D.C. | Peterson, John E. B.A. 1968, DePauw University | Ill. |
| Palumbo, Elaine F. B.A. 1967, George Washington University | Md. | Petock, Michael F. B.S. 1968, Pennsylvania State University | Va. |
| Pappas, George B.S. 1966, Carroll College, Wis. | Ill. | Phelps, Fred A. B.S. 1961, Pennsylvania State University | Va. |
| Parachini, Thomas G. B.A. 1966, Michigan State University | N.J. | Phillips, Bruce L. B.A. 1968, University of Rochester | N.Y. |
| Parker, Richard H., Jr. B.A. 1967, University of Houston | Texas | Pike, Kenneth R. B.A. 1966, Cornell University | N.J. |
| Parker, Whilden S. B.G.S. 1960, Louisiana State University | Va. | Pillsbury, Lynde H. B.A. 1965, Yale University | Minn. |
| Parley, Louis I. B.A. 1966, City College, New York | D.C. | Plesser, Ronald L. B.A. 1967, George Washington University | N.Y. |
| Parrett, Sherman O. B.S. in E.E. 1965, University of Cincinnati | Va. | Plover, Suellen B.S. 1963, Stanford University | Calif. |
| Pasachoff, Jane M. B.A. 1965, Radcliffe College | N.Y. | Polk, Robert L. B.A. 1962, Berea College | Va. |
| Pass, Robert N. B.A. 1966, Brown University | R.I. | Poltarak, William J. B.A. 1966, Pennsylvania State University | N.Y. |
| Paul, Robert E. B.A. 1967, Case Western Reserve University | Ohio | Ponder, Harry L. B.A. 1964, University of Arkansas | Ark. |
| Paul, Robert J. B.A. 1966, St. Francis Seminary | Wis. | Pope, Kent S. B.A. 1968, Denison University | Pa. |
| Peck, Jeffrey A. B.A. 1967, Syracuse University | Va. | Portugal, Richard J. B.A. 1968, Syracuse University | N.Y. |
| Pell, William F. B.A. 1968, DePauw University | Del. | Powell, Stephen E. B.A. 1967, Franklin and Marshall College | Md. |
| Penland, Raphael B. B.A. 1951, University of British Columbia | D.C. | Prah, Harry F. B.A. 1967, Purdue University | Va. |
| Pennell, David H. B.E. 1960, University of Alaska | Calif. | Preminger, Daniel M. B.A. 1967, Hunter College | N.Y. |
| Perkins, Roger A. B.A. 1964, Pennsylvania State University | Mo. | Proffer, Lanny M. B.A. 1964, Southwest Missouri State College | Mo. |
| Permutter, Leonard T. B.A. 1968, American University | N.Y. | Pursley, Thomas A., III B.A. 1966, Colgate University | N.Y. |
| Perrina, William B. B.S. 1968, Cornell University | N.Y. | Pyles, John C., III B.A. 1965, M.B.A. 1966, Dartmouth College | D.C. |

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| Quarton, Charles E. B.S. 1966, Northwestern University | Va. | Quintiere, Gary G. B.A. 1966, Lafayette College | N.J. |
| Quinn, Kieron F. B.S. 1963, Georgetown University | Md. | | |

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| Rabens, Ronald B. B.S. 1964, DePaul University | Ill. | Reas, James M. B.S. 1967, University of Utah | Utah |
| Rabinovitz, Bruce H. B.A. 1967, George Washington University | Mo. | Reid, William M. B.A. 1961, Southern Methodist University | Md. |
| Rackley, Claude L., Jr. B.S. 1965, North Carolina State University | N.C. | Reinhold, Charles E. B.A. 1968, University of Michigan | Mich. |
| at Raleigh | | Reiver, Robert E. B.B.A. 1968, George Washington University | Md. |
| Rae, James A. B.A. 1968, George Washington University | Md. | Resnik, Richard M. B.A. 1966, Fairleigh Dickinson University | N.Y. |
| Raskin, Martin G. B.E. 1968, Queens College, N.Y. | Md. | Revez, Joseph M. B.S. in E.E. 1965, Newark College of Engineering | Va. |
| Raskin, Samuel R. B.S. 1961, City College, New York | Md. | Reynolds, George T. B.A. 1967, Wesleyan University | N.J. |
| Rassler, John T. B.A. 1968, Seattle University | Calif. | | |

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| Rice, Paul H. | Md. | Rosen, James A. | Pa. |
| B.A. 1968, University of Michigan | | B.A. 1967, University of Pittsburgh | D.C. |
| Richardson, Billy W. | Va. | Rosen, Lucile L. | N.Y. |
| B.S. 1963, U.S. Coast Guard Academy | | B.S. 1962, Carnegie-Mellon University | |
| Richardson, Robert L. | Texas | Rosen, Mark A. | Va. |
| B.S. 1964, Texas A&M University | | B.A. 1967, University of Louisville | |
| Richter, Paul S. | Conn. | Rosenberg, Michael B. | Md. |
| B.S. 1968, Massachusetts Institute of Technology | | B.A. 1966, Brooklyn College | |
| Richter, Sheldon J. | Ohio | Ross, Mark S. | N.Y. |
| B.I.E. 1967, Ohio State University | | B.A. 1968, University of Maryland | |
| Rio, Richard S., Jr. | Va. | Rothenberg, Jeffrey | Conn. |
| B.A. 1967, University of Virginia | | B.S. 1968, Rensselaer Polytechnic Institute | |
| Rivers, Hugh F., Jr. | Md. | Rothman, Saul A. | D.C. |
| B.A. 1966, Catholic University of America | | B.A. 1967, Brown University | |
| Roberts, Helen W. | N.Y. | Royer, Stephen C. | Md. |
| B.A. 1958, Cornell University | | B.A. 1966, George Washington University | |
| Roberts, Joseph D. | Mo. | Rozzelle, David G. | Md. |
| B.A. 1968, University of Missouri | | B.A. 1968, University of Maryland | |
| Roberts, Joseph R. | Va. | Rubino, Louis J., Jr. | Va. |
| B.A. 1962, Pennsylvania State University | | B.B.A. 1967, George Washington University | |
| M.A. 1967, George Washington University | | Rubinstein, Alan I. | N.Y. |
| Robinson, Douglas G. | Mont. | B.A. 1967, Long Island University | |
| B.A. 1965, University of Washington | | Ruchelman, Stanley C. | D.C. |
| Roddy, John P. | D.C. | B.A. 1968, Brooklyn College | |
| B.S. in F.S. 1967, Georgetown University | | Ruff, Donald J. | Colo. |
| Rogol, Martin H. | N.Y. | B.S. in B.A. 1967, Seton Hall University | |
| B.A. 1966, University of Cincinnati | | Rush, Philip H. | Mo. |
| Rollins, Alton D. | Va. | B.A. 1967, University of Colorado | |
| B.S. 1960, American University | | Ruth, Larry L. | Pa. |
| Rosen, Gerald A. | N.Y. | B.A. 1967, Nebraska Wesleyan University | |
| B.A. 1951, Swarthmore College | | Rutstein, David | |
| M.A. 1967, Tufts University | | B.A. 1966, University of Pennsylvania | |

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| Sacks, Leonard A. | N.Y. | Scheer, Myles R. | Va. |
| B.A. 1968, Yehigh University | | B.A. 1966, Rutgers, the State University | Minn. |
| Sacks, Stephen H. | Md. | Schell, Ronald J. | Md. |
| B.A. 1968, University of Maryland | | B.A. 1967, University of Minnesota | |
| Sadler, Henry L., III | Va. | Scherr, Stephen A. | Va. |
| B.S. 1967, Georgia Institute of Technology | | B.A. 1963, St. Louis University | |
| Sage, William C. | Mich. | Schiff, Richard B. | N.Y. |
| B.A. 1968, University of Michigan | | B.A. 1966, University of Michigan | |
| Salomon, Kenneth D. | Md. | Schlanger, Michael A. | Va. |
| B.A. 1967, Tufts University | | B.A. 1965, Columbia University | |
| Samuels, George J. | N.J. | Schmelzer, Don F. | Md. |
| B.A. 1968, University of Bridgeport | | B.A. 1963, University of Redlands | |
| Sanders, Daniel R. | N.Y. | Schneider, Alan J. | N.J. |
| B.E. 1962, New York University | | B.A. 1968, University of Maryland | |
| Sanders, Earl A. | N.C. | Schneider, Howard B. | N.Y. |
| B.A. 1967, George Washington University | | B.A. 1967, Montclair State College | |
| Sandler, David N. | Md. | Schneider, Jeffrey H. | Va. |
| B.A. 1967, University of California, Los Angeles | | B.A. 1966, New York University | |
| Sapadin, David A. | N.Y. | Schneider, Jerold I. | Fla. |
| B.A. 1965, Brooklyn College | | B.S. in E.E. 1964, Newark College of Engineering | |
| Sapienza, John T., Jr. | Md. | Schneider, Todd J. | Va. |
| B.A. 1964, University of Pennsylvania | | B.A. 1965, University of Virginia | |
| Sauntry, John P., Jr. | Wash. | Schneiderman, Lenore B. | D.C. |
| B.S. in F.S. 1965, Georgetown University | | B.A. 1966, Hunter College | |
| Schaffer, Earl G. | N.Y. | Schneller, John W. | D.C. |
| B.S. 1967, University of Wisconsin | | B.S. 1963, Queens College, N.Y. | |
| Schain, Howard E. | N.Y. | Schnoll, Steven N. | D.C. |
| B.A. 1960, Yeshiva University | | B.A. 1968, George Washington University | |
| M.S. 1963, Yale University | | Schoenbrod, Rhonda C. | Md. |
| Schanker, William A. | Mo. | B.A. 1966, Bryn Mawr College | |
| B.S. in B.A. 1966, Washington University | | Schoo, William P. | N.J. |
| Schanker, Charles K. | Va. | B.A. 1968, Trinity College, Conn. | |
| B.B.A. 1966, George Washington University | | Schreiber, David E. | |
| Schaum, Michael P. | N.Y. | B.A. 1966, University of Virginia | |
| B.A. 1966, University of Michigan | | | |

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|--|-------|--|-------------|
| Schroeder, Richard W. B.S. 1966, Wisconsin State University, La Crosse | Va. | Shulman, James H. B.A. 1968, George Washington University | Conn. |
| Schuman, Stuart H. B.A. 1967, University of Pennsylvania | Pa. | Shupack, Richard A. B.A. 1968, Bowling Green State University | N.J. |
| Schwaab, Richard L. B.S. 1967, University of Wisconsin | Va. | Siber, Victor B.E.E. 1964, Pratt Institute | D.C. |
| Schwab, Kathleen B.A. 1965, Wellesley College | Idaho | M.S. 1966, Rensselaer Polytechnic Institute | Ill. |
| Schwartz, Daniel C. B.A. 1965, Stanford University | D.C. | Sideman, Robert A. B.A. 1967, University of Michigan | Pa. |
| Schwartz, David I. B.Ch.E. 1966, Pratt Institute | N.Y. | Siggers, Edward G. B.A. 1966, Oberlin College | Mich. |
| Schwartz, Edward B.S. 1942, DePaul University | Md. | Siler, John P. B.A. 1966, Yale University | N.J. |
| M.A., Ph.D. 1954, Northwestern University | D.C. | Silver, Joel Z. B.A. 1968, New York University | Va. |
| Schwartz, Teresa M. B.A. 1965, Stanford University | Pa. | Silverberg, Robert P. B.B.A. 1967, Tulane University of Louisiana | Pa. |
| Schwartzbach, M. Gerald B.A. 1966, Washington and Jefferson College | Ohio | Simkanich, John J. B.S. 1964, Drexel Institute of Technology | Va. |
| Schwartzberg, Sherman D. B.S. 1968, Ohio State University | Mass. | Simons, Frank S. B.A. 1966, University of Colorado | Calif. |
| Scott, Peter W. B.A. 1955, Amherst College | Va. | Simpson, Robert C. B.A. 1966, University of Southern California | N.Y. |
| Scully, Cornelius D. B.A. 1957, University of Virginia | Pa. | Singman, Thomas M. B.A. 1966, University of Michigan | Md. |
| Senks, George H. B.A. 1968, University of Virginia | Pa. | Sirkin, Alan L. B.A. 1961, M.B.A. 1965, University of Cincinnati | N.J. |
| Sense, Stephen B. B.A. 1968, Williams College | Md. | Siss, Alfred A. B.A. 1966, Gettysburg College | Md. |
| Seawright, David S. B.S. 1964, University of North Carolina at Chapel Hill | N.Y. | Skelly, Kenneth B. B.A. 1968, Xavier University, Ohio | N.J. |
| Secol, Kenneth F. B.S. 1968, Boston University | Pa. | Skladany, Barney J., Jr. B.A. 1967, Rutgers, the State University | N.J. |
| Seiber, Sherry S. B.A. 1966, Ohio University | Md. | Sklar, Warren A. B.S. 1966, Case Western Reserve University | Va. |
| Seidel, Lester B. B.A. 1966, University of Michigan | Mich. | Slade, Grant E. B.A. 1966, New Mexico Highlands University | Ariz. |
| Sellers, Dorothy D. B.A. 1965, Stanford University | N.Y. | Slivka, Richard P. B.S. 1966, Arizona State University | Mich. |
| Semler, Steven R. B.A. 1967, Hunter College | Mich. | Slobasky, Michael R. B.A. 1967, Wayne State University | Va. |
| Senkowski, Ray M. B.A. 1968, Yale University | Md. | Slobod, Jack D. B.E.E. 1964, City College, New York | Md. |
| Setta, James V. B.A. 1966, University of Maryland | Pa. | Smedley, Jerry M. B.A. 1964, Indiana University | Philippines |
| Shachter, Alan S. B.A. 1968, University of Pennsylvania | N.Y. | Smiley, Robert R. B.S. 1956, U.S. Naval Academy | Va. |
| Shapiro, Elliott C. B.A. 1966, Syracuse University | Pa. | Smith, Barry H. B.A. 1968, Indiana University | Va. |
| Shay, Edward F. B.A. 1966, Colgate University | Va. | Smith, Donald G. B.A. 1953, Kansas State Teachers College | Ill. |
| Shear, Stephen B.S. 1965, Washington University | Md. | Smith, Eric L. B.S. 1964, University of California, Los Angeles | Md. |
| Shackels, Thomas M. B.S. 1965, U.S. Military Academy | N.Y. | Smith, Gary A. B.A. 1967, University of Maryland | Va. |
| Shenbein, Sol B.E.E. 1966, City College, New York | Md. | Smith, Jack D., Jr. B.A. 1968, George Washington University | Ky. |
| Sheppard, Susan A. B.A. 1968, University of Wisconsin | Md. | Smith, John G. B.S. 1966, Case Western Reserve University | Conn. |
| Sherry, John P. B.S. 1968, University of Maine | N.Y. | Smith, John J. B.A. 1968, Columbia University | Ill. |
| Sherwood, Wallace W. B.A. 1966, St. Vincent College | Mass. | Smith, Peter T. B.S. 1968, Loyola University, Ill. | Ill. |
| Shirley, George W. B.S. 1941, Boston University | Va. | Smith, Sheldon L. B.A. 1968, Roosevelt University | Ill. |
| Shoun, Mary C. B.A. 1968, University of Maryland | Pa. | Snider, Marshall A. B.A. 1966, Washington University | Md. |
| Shriver, Donald A. B.S. in C.E. 1964, Drexel Institute of Technology | | Snider, Richard D. B.A. 1968, Cornell College | |

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| Solit, James N. | N.Y. | Stenzel, Dennis E. | Va. |
| B.A. 1967, George Washington University | | B.S. 1967, Brigham Young University | D.C. |
| Solomon, Richard I. | Mich. | Stern, Harry M. | Conn. |
| B.A. 1966, University of Michigan | | B.S. 1968, Pennsylvania State University | |
| Sommer, Gerald I. | Md. | Stien, Barry G. | Md. |
| B.A. 1966, American University | | B.A. 1966, Temple University | |
| Soponis, Gaylin G. | D.C. | Stoll, Richard | N.Y. |
| B.A. 1966, Mount Holyoke College | | B.A. 1968, University of Maryland | |
| Soponis, Mento A. | Pa. | Stoller, Andrew R. | N.Y. |
| B.A. 1966, Princeton University | | B.S. 1966, Cornell University | |
| Spaeder, Roger C. | Ohio | Stolzar, Peter H. | Ill. |
| B.S. in Ed. 1965, Bowling Green State University | | B.A. 1966, University of Rochester | |
| Spendlove, Larry V. | Va. | Stone, Alan J. | N.J. |
| B.S. 1965, Brigham Young University | | B.A. 1966, Miami University | |
| Spiegel, James A. | D.C. | Stopek, Seth | N.Y. |
| B.S. 1966, University of Wisconsin | | B.A. 1966, Syracuse University | |
| Spiegel, Virginia A. | Ill. | Storch, Stephen E. | Pa. |
| B.A. 1966, Mount Holyoke College | | B.A. 1967, American University | |
| Spirer, Alan R. | Va. | Stout, Donald E. | Md. |
| B.A. 1968, Johns Hopkins University | | B.S. 1968, Pennsylvania State University | |
| Spivack, Stephen R. | Pa. | Stover, Jon R. | D.C. |
| B.A. 1968, Temple University | | B.A. 1967, Wesleyan University | |
| Sprague, Dale M. | Kans. | Strong, Jay V., Jr. | La. |
| B.A. 1967, University of Kansas | | B.A. 1968, Oglethorpe College | |
| Stake, Charles D. | D.C. | Stuckey, John M., Jr. | |
| B.A. 1968, George Washington University | | B.A. 1961, M.A. 1963, Louisiana State University | Va. |
| Stanley, Nancy E. | D.C. | Suffling, David N. | Va. |
| B.A. 1964, Knox College | | B.S. 1968, University of Tennessee | |
| Steenland, Peter R., Jr. | N.J. | Sumida, Clyde E. | Va. |
| B.A. 1967, George Washington University | | B.A. 1968, University of Hawaii | |
| Steich, Thomas J. | Ohio | Sutton, Samuel J. | N.Y. |
| B.A. 1966, George Washington University | | B.A. 1964, University of Arizona | |
| Stein, John H. | D.C. | Swanson, Patricia H. | Md. |
| B.A. 1964, Yale University | | B.A. 1967, Smith College | |
| Stein, Richard A. | Del. | Swanson, Terrance E. | Ill. |
| B.A. 1968, Duke University | | B.A. 1963, Coe College | |
| Stein, Robert J. | W.Va. | Swartz, James W. | Calif. |
| B.A. 1966, Antioch College | | B.A. 1966, Yale University | |
| Stenstrom, Robert B. | Mo. | Swift, Stephen J. | |
| B.S. in M.E. 1967, University of Washington | | B.A. 1967, Brigham Young University | |

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| Tabas, Philip | Pa. | Thomas, Donald W. | Va. |
| B.A. 1968, Pennsylvania State University | | B.S. 1953, University of Iowa | Ohio |
| Talbert, Dennis E., Jr. | Va. | Thomas, Joseph F. | Idaho |
| B.S. 1961, Virginia Polytechnic Institute | | B.A. 1968, Marquette University | |
| Taltavull, William W. | Md. | Thomas, Lynn E. | Mass. |
| B.A. 1966, Catholic University of America | | B.A. 1961, Idaho State University | |
| Tamis, Donald H. | N.Y. | M.S. 1964, Boston University | |
| B.A. 1967, Tufts University | | Thompson, James A., Jr. | Va. |
| Tanis, Ronald J. | Va. | B.A. 1962, University of Pennsylvania | |
| B.S. 1960, Western Michigan University | | Tiedt, Glenn F. | Va. |
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Md. LL.B. 1965, Georgetown University
Kipnis, Bruce E.
B.S. 1963, University of North Carolina at
Chapel Hill
Texas J.D. 1966, American University
Klappe, James P.
B.A. 1963, LL.B. 1968, University of Texas
at Austin
Md. Kline, Jerome N.
B.S. 1965, Pennsylvania State University
D.C. J.D. 1968, Villanova University
Konopka, Arthur F.
B.A. 1961, Creighton University
Conn. LL.B. 1966, Columbia University
Kosinski, Richard H.
B.A. 1963, University of Connecticut
D.C. J.D. 1966, St. John's University, N.Y.
Kovey, Mark H.
B.A. 1964, Columbia University
Md. LL.B. 1967, New York University
Krieger, Paul E.
B.S. 1964, University of Pittsburgh
Va. LL.B. 1968, University of Maryland
Krieger, Walter W., Jr.
B.A. 1959, Ballarmine-Ursuline College
LL.B. 1962, University of Louisville

L

Landen, Walter J.
B.S. in B.A. 1962, J.D. 1965, University of
Denver
Landman, Gary B.
B.S. 1965, University of Maryland
J.D. 1968, George Washington University
Larsen, Erik C.
B.A. 1962, LL.B. 1965, Vanderbilt University
Leftwich, Willie L.
B.S. in E.E. 1960, Howard University
LL.B. 1967, George Washington University
Lepovetsky, Barney C.
B.S. 1949, M.S. 1951, Ohio State University
Ph.D. 1954, J.D. 1963, Ohio Northern
University

Va. Levy, Lawrence
B.A. 1963, University of Pennsylvania
Va. LL.B. 1966, Boston University
D.C. Lewis, Walter L.
B.A. 1947, LL.B. 1950, University of Virginia
Libby, Henry N.
B.S. 1965, LL.B. 1968, University of
Pennsylvania
Va. Lieblich, Sharon K.
B.A. 1963, Barnard College
Va. LL.B. 1966, Harvard University
Linder, Robert D.
B.A. 1954, J.D. 1959, University of Iowa
M.B.A. 1961, Harvard University

Lisle, Raymond E.
B.S. 1929, City College, New York
M.A. 1930, Columbia University
J.D. 1936, New York University
Lott, Chester T.
B.P.A. 1963, J.D. 1967, University of Mississippi

D.C. Lurie, Ronald U. Va.
B.S., B.A. 1964, University of Missouri
J.D. 1967, Washington University
LL.M. 1968, New York University
D.C. Lynch, Robert S. Ariz.
B.A. 1961, LL.B. 1964, University of Arizona
Lynn, Theodore S. N.Y.
B.A. 1958, Columbia University
LL.B. 1961, Harvard University
LL.M. 1962, New York University

M

Macrory, Patrick F. England
B.A. M.A. 1962, Oxford University, England
Madani, Mohammed O. Egypt
Licence en Droit 1961, Cairo University.
M.A. 1966, American University
Mahan, David L. Ind.
B.A. 1963, University of Kentucky
LL.B. 1966, Indiana University
Maher, Thomas P. Va.
B.A. 1963, LL.B. 1966, Fordham University
Manfreda, Richard H. D.C.
B.S. in B.A. 1963, Georgetown University
J.D. 1966, American University
Mangrum, Robert A. Ala.
B.S. 1964, LL.B. 1965, University of Tennessee
Manning, Philip H. D.C.
B.A. 1965, Merrimack College
J.D. 1968, Catholic University of America
Marlar, Richard L. Va.
B.S. 1956, University of Oklahoma
LL.B. 1963, American University
Martin, John I. D.C.
B.A. 1959, Utica College
LL.B. 1962, Syracuse University
Marx, Peter A. N.Y.
B.A. 1964, M.B.A. 1967, J.D. 1968, Cornell University
Maurer, Jeffery W. Fla.
B.S. 1963, Auburn University
J.D. 1966, University of Illinois
Mararoff, Stanley G. D.C.
B.A. 1960, LL.B. 1965, University of Maryland
McDonald, Bruce L. D.C.
B.A. 1963, LL.B. 1966, Harvard University
McGill, Arthur A. Va.
B.S. in F.B. 1958, Tufts University
J.D. 1967, Cleveland-Marshall Law School of Baldwin-Wallace College
McGuire, Henry J. D.C.
B.A. 1965, J.D. 1968, University of Arizona
Mee, John F. D.C.
B.A. 1965, College of the Holy Cross
LL.B. 1968, Suffolk University
Mehta, Pinakin A. India
LL.B. 1967, Gujarat University, India
Merson, Edgar G. Va.
B.A. 1958, J.D. 1961, Northwestern University
Mihailovic, Predrag P. Va.
S.J.D. 1953, University of Paris, France
Miller, John M. W.Va.
B.A. 1959, LL.B. 1962, West Virginia University
Mofsky, James S. Fla.
B.A. 1956, Wesleyan University
LL.B. 1959, LL.M. 1966, Cornell University
Moore, Michael M. Va.
B.A. 1961, LL.B. 1964, University of Washington
Moritt, James C. Va.
B.A. 1963, J.D. 1966, University of Idaho
Morris, Jerome B. Va.
B.A. 1965, College of the Holy Cross
J.D. 1968, Washington University
Morse, Anita L. Ind.
B.S. 1962, Purdue University
J.D. 1968, Indiana University
Moss, Frederick E. Md.
B.A. 1961, Rice University
LL.B. 1964, University of Mississippi
Mullins, Donald H. Va.
B.S. 1965, Iowa State University of Science and Technology
LL.B. 1967, University of Tennessee
Munroe, Andrew T. D.C.
B.A. 1962, LL.B. 1966, Harvard University
Murphy, David R. Va.
B.Ch.E. 1957, Rensselaer Polytechnic Institute
LL.B. 1966, George Washington University
Murray, Brenda P. Mass.
B.A. 1960, D'Youville College
LL.B. 1963, Boston University
Murrell, Dan S. Va.
B.A. 1956, J.D. 1968, University of Mississippi
Myers, Donald J. Va.
B.A. 1964, City College, New York
LL.B. 1967, Cornell University
Nance, Dean A. Ill.
B.S. 1965, J.D. 1968, University of Illinois
Naquin, Ronald L. La.
B.A. 1963, LL.B. 1966, Tulane University of Louisiana
Nataadajaja, Adeleida A. Indonesia
LL.M. 1959, University of Indonesia
Nauheim, Stephen A. Va.
B.S. 1964, University of North Carolina at Chapel Hill
J.D. 1967, Georgetown University
Neal, Edward G. Md.
B.A. 1962, Florida State University
LL.B. 1966, Eastern College
Negron, Victor H. Md.
B.A., LL.B. 1956, St. Mary's University of San Antonio
Nerenberg, Roy Md.
B.S. 1959, University of Pennsylvania
LL.B. 1962, Temple University
Ng, Thien K. Md.
B.B.A. 1965, J.D. 1968, Golden Gate College

- Noland, Richard P. Va. Nyce, Peter Q. D.C.
 B.A. 1965, LL.B. 1966, University of
 Texas at Austin
 Normand, Carlton T. Texas
 B.A. 1963, University of Texas at Austin
 LL.B. 1964, Baylor University

O

- Oshina, Richard A. Va.
 B.S. 1963, American University
 LL.B. 1966, St. John's University, N.Y.

P

- Pachter, John S. Miss. Portnoy, Noel Texas
 B.A. 1963, Tulane University of Louisiana
 LL.B. 1966, George Washington University
 Pai, Sarswati S. India Powell, Stephen J. Fla.
 LL.B. 1963, Government Law College, India
 Paroutsas, Athanasios D. D.C. Preston, John E. D.C.
 LL.B. 1960, University of Athens, Greece
 M.C.L. 1968, Duke University
 Pashkoff, Lionel E. N.Y. Price, Joseph H. Va.
 B.A. 1965, University of Maryland
 J.D. 1968, George Washington University
 Patterson, Justin P. Ind. Price, Michael G. D.C.
 B.S. 1962, J.D. 1965, Indiana University
 Pels, Kenneth A. Md. Pritchett, Glenn D. Va.
 B.S.C. 1958, Spring Hill College
 LL.B. 1962, University of Mississippi
 Pineo, Paul Va. Pruett, John K. Va.
 B.A. 1963, Colby College
 LL.B. 1966, Georgetown University
 Pipestem, Francis B. Okla.
 B.A. 1965, Northwestern Oklahoma State
 University
 J.D. 1968, University of Oklahoma

Q

- Quinlan, Joseph M. N.Y.
 B.S.S. 1963, Fairfield University
 LL.B. 1966, Fordham University

R

- Radue, David G. D.C. Rider, James I. N.Y.
 B.A. 1959, Colgate University
 LL.B. 1965, George Washington University
 Raiken, Allen L. Va. Ridley, Francis R. Va.
 B.A. 1964, St. Lawrence University
 LL.B. 1967, St. John's University, N.Y.
 Ranney, John C. Va. Robins, Philip L. Va.
 B.A. 1952, College of the Holy Cross
 LL.B. 1957, Georgetown University
 Reale, Ulrico Italy Roessler, Ronald J. Va.
 LL.B. 1963, John Marshall Law School
 LL.M. 1966, George Washington University
 Reese, John H. Colo. Romeo, Peter J. D.C.
 B.B.A., LL.B. 1954, Southern Methodist
 University
 LL.M. 1965, George Washington University
 Reeves, Clifford L. D.C. Rosen, Harvey H. Va.
 B.A. 1966, J.D. 1968, University of Alabama
 Reilly, Michael A. N.Y. Rosen, Mark I. Va.
 B.A. 1962, Syracuse University
 J.D. 1965, University of Miami
 Reilly, Thomas W. Va. Rosenberg, Mark
 B.A. 1954, LL.B. 1956, St. John's
 University, N.Y.

- Rosenberg, Peter D.
B.Ch.E. 1963, LL.B. 1968, New York University N.Y.
Rosengarden, Eugene A.
B.S. 1962, LL.B. 1965, University of Maryland Md.
Ruppert, George M.
B.S. in B.A. 1962, LL.B. 1965, Georgetown University Va.

S

- Salisbury, William J.
B.A. 1964, Northeastern University Va.
LL.B. 1967, Boston University
Scanlan, William J.
B.A. 1963, University of Virginia Va.
LL.B. 1966, University of Texas at Austin
Scheffer, John N.
B.A. 1963, University of Oklahoma Texas
LL.B. 1966, University of Texas at Austin
Schissel, Burton L.
B.A. 1961, Brooklyn College Md.
LL.B. 1965, St. John's University, N.Y.
Schmidt, Richard H.
B.A. 1954, Middlebury College Md.
LL.B. 1959, George Washington University
Schor, Laurence Va.
B.B.A. 1963, Southern Methodist University
LL.B. 1966, University of Texas at Austin
Schwartz, Charles A.
B.A. 1965, LL.B. 1968, Columbia University N.Y.
Schwartz, Howard S.
B.B.A. 1959, University of Miami Va.
LL.B. 1963, George Washington University
Seelman, Frederick G.
B.A. 1959, LL.B. 1962, University of Maryland Md.
Seakin, Morris P.
B.A. 1965, J.D. 1968, Northwestern University D.C.
Seif, Karl J.
B.A. 1958, LL.B. 1961, University of Maryland Md.
Seymour, Hiram P.
LL.B. 1967, Florida Agricultural and Mechanical University Fla.
Sfasciotti, Mary Louise
B.A. 1962, Ripon College Wis.
J.D. 1965, Northwestern University
Shaw, Russell C.
B.S. in B.A. 1962, LL.B. 1965, Ohio State University Ohio
Shor, David.
B.A. 1965, New York University N.J.
LL.B. 1968, Boston University
Shoun, Robert E.
B.A. 1961, Randolph-Macon College Va.
LL.B. 1964, Duke University
Singh, Mandev
B.A. 1951, Khalsa College, India India
LL.B. 1953, Law College, Jullundur, India
Sirulnik, Eric S.
B.A. 1965, Franklin and Marshall College Mass
LL.B. 1968, Boston University
Slomoff, Robert J.
B.S. 1965, Wayne State University Md.
LL.B. 1968, University of Maryland
Sloniewsky, Roman W.
B.S. 1962, St. Peter's College, N.J. Va.
LL.B. 1965, Rutgers, the State University
Smith, Barry P.
B.S. in E.E. 1965, Clarkson College of Technology Va.
LL.B. 1968, Brooklyn Law School
Smith, John C., Jr.
LL.B. 1968, Howard University D.C.
Snider, Ronald R.
B.S. in E.E. 1960, Purdue University D.C.
LL.B. 1963, University of Michigan
Sobel, Thomas M.
B.A. 1965, Columbia University N.Y.
LL.B. 1968, Boston University
Solomon, Larry S.
J.D. 1968, Detroit College of Law Mich.
Sottile, Mary J.
B.A. 1964, Hood College S.C.
J.D. 1967, University of South Carolina
Squires, Lawrence S.
B.S. 1958, Michigan Technological University Mich.
LL.B. 1967, University of Maryland
Stallcup, James W.
B.A. 1965, University of Missouri Ark.
J.D. 1968, Memphis State University
Stark, Charles S.
B.A. 1965, Princeton University Ill.
LL.B. 1968, Yale University
Streinz, Clara J.
J.D. 1949, LL.M. 1950, George Washington University Pa.
Sturtevant, Albert D.
B.A. 1963, LL.B. 1967, Yale University D.C.
Suchanek, Leonard
B.S. 1958, LL.B. 1962, Creighton University Va.
LL.M. 1967, George Washington University

T

- Takeuchi, Norihiro
B.A. 1960, Tokyo University of Foreign Studies, Japan Japan
LL.M. 1962, Hitotsubashi University, Japan
Tidwell, Moody D., III
B.A. 1961, Ohio Wesleyan University Va.
J.D. 1965, American University
Tigner, James G.
B.S. 1961, New Mexico State University Va.
LL.B. 1965, Baylor University
Tomar, Laurence
B.A. 1965, J.D. 1968, Rutgers, the State University D.C.
Tomeo, Richard W.
B.A. 1963, LL.B. 1966, University of Connecticut Va.
Track, Daniel B.
B.S. 1954, Bloomsburg State College Va.
LL.B. 1957, Temple University
Tully, John L., Jr.
B.B.A. 1953, St. Bernardine of Siena College N.Y.
LL.B. 1961, Catholic University of America
Tun, Oung M.
B.A. 1956, LL.B. 1960, University of Rangoon, Burma Burma

U

- Urey, David S. D.C.
 B.S. in I.E. 1958, Northwestern University
 J.D. 1964, George Washington University

V

- Vassanelli, Clement M. D.C.
 B.A. 1963, Duquesne University
 J.D. 1966, Case Western Reserve University
- Vazquez, Pedro R. Md.
 B.S. 1957, U.S. Naval Academy
 LL.B. 1964, University of Puerto Rico
- Velazquez, Antonio R. Paraguay
 LL.B. 1968, Universidad Nacional de Asuncion, Paraguay
- Vidana, Luis H. Cuba
 LL.B. 1941, University of Havana, Cuba
- VonHelena, Carl R. D.C.
 B.S. 1961, Virginia Military Institute
 J.D. 1968, Detroit College of Law

W

- Wallach, Frederick E. Md.
 B.A. 1959, Williams College
 LL.B. 1962, Harvard University
- Warwick, Howard R., Jr. Texas
 B.S. 1960, University of Houston
 LL.B. 1962, Southern Methodist University
- Wasser, Nathan H. Md.
 B.A. 1964, University of Maryland
 LL.B. 1967, Catholic University of America
- Watkins, Linda L. Va.
 B.A. 1963, Mary Washington College of the University of Virginia
 B.C.L. 1965, College of William and Mary
- Wayne, Howard J. Va.
 B.A. 1963, University of Massachusetts
 LL.B. 1966, Boston University
- Welch, Gerard S., Jr. Va.
 B.S. 1957, Seattle University
 LL.B. 1967, Catholic University of America
- Wenker, Paul F. D.C.
 B.S. 1964, Xavier University, Ohio
 J.D. 1967, Georgetown University
- West, Luther C. Ala.
 B.A. 1948, Birmingham-Southern College
 LL.B. 1950, George Washington University
- Wheeler, Matthew J., Jr. Va.
 B.S. 1961, Loyola University, Ill.
 LL.B. 1964, John Marshall Law School
- White, Charles A., Jr. Va.
 B.A. 1961, B.C.L. 1963, College of William and Mary
- White, Timothy M. Minn.
 B.A. 1968, Tufts University
- White, Timothy M. Va.
 B.A. 1964, J.D. 1967, University of Minnesota
- Wilder, Roland P., Jr. D.C.
 B.A. 1963, Washington and Jefferson College
 LL.B. 1966, Vanderbilt University
- Wiles, Ernest E. Va.
 B.S. 1940, University of Kansas
 LL.B. 1943, Yale University
- Wilken, William J. D.C.
 B.A. 1949, University of Iowa
 LL.B. 1959, George Washington University
- Wille, Paul A. Mo.
 B.A. 1956, Lake Forest College
 J.D. 1959, University of Chicago
- Wilson, Donald R. N.Y.
 B.A. 1960, LL.B. 1964, University of Missouri
- Wilson, Stephen R. Mont.
 B.A. 1962, Lehigh University
 LL.B. 1966, Brooklyn Law School
- Wold, Douglas J. Va.
 B.S. 1963, LL.B. 1965, University of Montana
- Wolitz, Raymond L.
 B.A. 1965, Queens College, N.Y.
 J.D. 1968, New York University

Y

- Yambrusic, Edward S. D.C.
 B.A. 1957, Duquesne University
 LL.B. 1966, University of Baltimore

Z

- Zafren, Daniel H. N.Y.
 B.A. 1961, Queens College, N.Y.
 LL.B. 1964, New York University
- Zdravkovic, Dusan Md.
 LL.B. 1962, Belgrade University, Yugoslavia
- Zegrea, Nick G.
 B.S. in I.E. 1959, LL.B. 1962, West Virginia University

Institutions in which Law Center Students Earned Degrees*

| | | | |
|--|----|--|----|
| Adams State College | 1 | California, University of, Davis | 1 |
| Adelphi College | 2 | California, University of, Los Angeles | 6 |
| Akron, University of | 1 | California, University of, Riverside | 1 |
| Alabama, University of | 3 | California Western University | 1 |
| Alaska, University of | 1 | Carleton College | 1 |
| Albion College | 1 | Carnegie-Mellon University | 3 |
| Aleppo, University of, Syria | 1 | Carroll College, Wis. | 1 |
| Alfred University | 1 | Case Western Reserve University .. | 8 |
| American University | 33 | Catholic University of America | 15 |
| Amherst College | 2 | Catholic University of Puerto Rico .. | 1 |
| Antioch College | 2 | Central Michigan University | 1 |
| Arizona State University | 2 | Central Missouri State College | 1 |
| Arizona, University of | 6 | Chaminade College of Honolulu | 1 |
| Arkansas, University of | 3 | Chattanooga, University of | 1 |
| Ateneo de Manila University, Philippines | 1 | Chicago, University of | 2 |
| Athens, University of, Greece | 1 | Christian Brothers College | 1 |
| Auburn University | 1 | Cincinnati, University of | 4 |
| Augsburg College | 1 | Citadel, The | 1 |
| Baghdad, University of, Iraq | 1 | Claremont Men's College | 2 |
| Ball State University | 1 | Clarion State College | 1 |
| Baltimore, University of | 1 | Clark University | 1 |
| Barnard College | 2 | Clarkson College of Technology | 1 |
| Baylor University | 4 | Cleveland-Marshall Law School of Baldwin-Wallace College | 1 |
| Belgrade University, Yugoslavia | 1 | Coe College | 1 |
| Bellarmino-Uriusline College | 1 | Colby College | 1 |
| Beloit College | 1 | Colgate University | 10 |
| Berea College | 1 | Colorado College | 1 |
| Bethany College, W.Va. | 1 | Colorado State University | 1 |
| Birmingham-Southern College | 1 | Colorado, University of | 4 |
| Bloomsburg State College | 1 | Columbia University | 19 |
| Bob Jones University | 1 | Connecticut, University of | 8 |
| Boston College | 5 | Cooper Union | 3 |
| Boston University | 19 | Cornell College | 1 |
| Bowling Green State University | 3 | Cornell University | 23 |
| Brandeis University | 3 | Creighton University | 3 |
| Brenau College | 1 | Cumberland University | 1 |
| Bridgeport, University of | 1 | Damascus, University of, Syria | 1 |
| Brigham Young University | 17 | Dartmouth College | 13 |
| British Columbia, University of | 2 | Davidson College | 1 |
| Brooklyn College | 21 | Davis and Elkins College | 1 |
| Brooklyn Law School | 3 | Delaware, University of | 2 |
| Brown University | 10 | Denison University | 7 |
| Bryn Mawr College | 1 | Denver, University of | 3 |
| Bucknell University | 8 | DePaul University | 2 |
| C. W. Post College | 2 | DePauw University | 4 |
| Cairo University, Egypt | 1 | Detroit College of Law | 3 |
| California Institute of Technology .. | 1 | Detroit, University of | 1 |
| California Maritime Academy | 1 | Dickinson College | 8 |
| California State College at Long Beach | 1 | Dickinson School of Law | 2 |
| California, University of, Berkeley .. | 9 | | |

* Figures represent students registered spring semester 1969

| | | | |
|--------------------------------------|-----|--------------------------------------|----|
| Drake University | 2 | John Marshall Law School | 2 |
| Drew University | 1 | Johns Hopkins University | 8 |
| Drexel Institute of Technology | 7 | Juniata College | 2 |
| Duke University | 7 | Kansas State College of Pittsburg.. | 1 |
| Duquesne University | 4 | Kansas State Teachers College..... | 1 |
| D'Youville College | 1 | Kansas State University of | 1 |
| Eastern College | 1 | Agriculture and Applied Science | 6 |
| Eastern Kentucky University | 1 | Kansas, University of | 1 |
| Emory University | 1 | Kent State University | 1 |
| Fairfield University | 2 | Kentucky, University of | 1 |
| Fairleigh Dickinson University | 2 | Khalsa College, India | 1 |
| Florida Agricultural and | | King's College, Pa. | 1 |
| Mechanical University | 2 | Knox College | 1 |
| Florida, University of | 3 | Kyungpook National University, | 1 |
| Fordham University | 8 | Korea | 6 |
| Franklin and Marshall College | 10 | Lafayette College | 1 |
| Fresno State College | 1 | Lake Forest College | 3 |
| Frostburg State College | 1 | LaSalle College | 1 |
| Furman University | 2 | Law College, Jullundur, India | 7 |
| George Washington University | 131 | Lehigh University | 2 |
| Georgetown University | 46 | Le Moyne College | 1 |
| Georgia Institute of Technology | 3 | Lewis and Clark College | 1 |
| Gettysburg College | 2 | Long Island University | 1 |
| Golden Gate College | 1 | Louisiana Polytechnic Institute | 3 |
| Goucher College | 2 | Louisiana State University | 4 |
| Government Law College, India | 1 | Louisville, University of | 2 |
| Grinnell College | 2 | Loyola University, Ill. | 1 |
| Guilford College | 1 | Lycoming College | 1 |
| Gujarat University, India | 1 | MacMurray College | 3 |
| Hamilton College | 3 | Maine, University of | 1 |
| Hampton Institute | 1 | Manhattan College | 1 |
| Hanover College | 1 | Manhattanville College | 2 |
| Harvard University | 16 | Marietta College | 3 |
| Hastings College of the Law | 2 | Marquette University | 1 |
| Havana, University of, Cuba | 4 | Marshall University | |
| Haverford College | 1 | Mary Washington College of the | 1 |
| Hawaii, University of | 3 | University of Virginia | 46 |
| Hitotsubashi University, Japan..... | 1 | Maryland, University of | 1 |
| Hobart College | 2 | Maryville College | |
| Hofstra University | 2 | Massachusetts Institute of | 3 |
| Holy Cross, College of the | 9 | Technology | 3 |
| Hood College | 1 | Massachusetts, University of | 1 |
| Houston, University of | 5 | McGill University, Canada | 2 |
| Howard University | 7 | Memphis State University | 2 |
| Hunter College | 4 | Merrimack College | 12 |
| Idaho State University | 1 | Miami University | 10 |
| Illinois, University of | 8 | Miami, University of | 9 |
| Indiana University | 9 | Michigan State University | 1 |
| Indiana University of Pennsylvania | 1 | Michigan Technological University | 38 |
| Indonesia, University of | 1 | Michigan, University of | 3 |
| Inter-American University of | | Middlebury College | 1 |
| Puerto Rico | 1 | Mills College | 5 |
| Iowa State University of Science | | Minnesota, University of..... | 5 |
| and Technology | 4 | Mississippi, University of | 7 |
| Iowa, University of | 6 | Missouri, University of | 1 |
| John Carroll University | 2 | Monmouth College, N.J. | |

| | | | |
|-------------------------------------|----|--|----|
| Montana State University | 1 | Oxford University, England | 1 |
| Montana, University of | 2 | Panjab University, India | 2 |
| Montclair State College | 1 | Paris, University of, France | 1 |
| Morehouse College | 1 | Pembroke College | 1 |
| Morningside College | 1 | Pennsylvania State University | 33 |
| Mount Holyoke College | 3 | Pennsylvania, University of | 30 |
| Mount Mercy College, Pa. | 1 | Phillips University | 1 |
| Mount Saint Mary's College, Md. | 2 | Pittsburgh, University of | 12 |
| National Cheng-chi University, | | Pomona College | 1 |
| Taiwan | 2 | Pratt Institute | 2 |
| National Taiwan University | 1 | Princeton University | 14 |
| Nebraska, University of | 1 | Providence College | 2 |
| Nebraska, University of, at Omaha | 1 | Puerto Rico, University of | 2 |
| Nebraska Wesleyan University | 2 | Purdue University | 8 |
| Nevada Southern University | 2 | Queens College, N.Y. | 13 |
| Nevada, University of | 1 | Radcliffe College | 1 |
| New Hampshire, University of | 3 | Randolph-Macon College | 1 |
| New Haven College | 1 | Rangoon, University of, Burma | 1 |
| New Mexico Highlands University.. | 1 | Redlands, University of | 1 |
| New Mexico State University | 1 | Reed College | 1 |
| New Mexico, University of | 1 | Regis College, Colo. | 1 |
| New York, City College | 21 | Rensselaer Polytechnic Institute | 5 |
| New York, State University of, at | | Rice University | 1 |
| Binghamton | 1 | Ripon College | 1 |
| New York, State University of, at | | Roanoke College | 1 |
| Buffalo | 4 | Rochester Institute of Technology.. | 1 |
| New York University | 33 | Rochester, University of | 6 |
| Newark College of Engineering | 3 | Roosevelt University | 1 |
| Niagara University | 1 | Rutgers, the State University | 14 |
| North Carolina State University at | | St. Ambrose College | 1 |
| Raleigh | 1 | St. Bernardine of Siena College.... | 1 |
| North Carolina, University of, at | | St. Francis Seminary | 1 |
| Chapel Hill | 15 | St. John's University, N.Y. | 6 |
| North Dakota State University | 1 | St. Lawrence University | 2 |
| North Park College and Theologi- | | St. Louis University | 3 |
| cal Seminary | 1 | St. Mary's University of San | |
| Northwestern Oklahoma State | | Antonio | 2 |
| University | 1 | St. Olaf College | 2 |
| Northeastern University | 3 | St. Peter's College, N.J. | 1 |
| Northern State College | 1 | St. Vincent College | 1 |
| Northwestern University | 11 | San Francisco State College | 1 |
| Notre Dame, University of | 5 | Seattle University | 2 |
| Oakland University | 1 | Seton Hall University | 2 |
| Oberlin College | 1 | Sharia College, Saudi Arabia | 1 |
| Occidental College | 1 | Skidmore College | 2 |
| Oglethorpe College | 1 | Smith College | 2 |
| Ohio Northern University | 1 | Soochow University, China | 1 |
| Ohio State University | 13 | South Carolina, University of | 5 |
| Ohio University | 3 | South Dakota State University | 2 |
| Ohio Wesleyan University | 3 | South, University of the | 2 |
| Oklahoma, University of | 6 | Southeastern Massachusetts | |
| Olivet College | 1 | Technological Institute | 1 |
| Olivet Nazarene College | 1 | Southern California, University of.. | 3 |
| Oregon State University | 3 | Southern Methodist University | 9 |
| Oregon, University of | 2 | Southwest Missouri State College.... | 1 |
| Ourachita Baptist University | 1 | Southwestern Louisiana, University | |
| | | of | 1 |

| | | | |
|---|----|--|----|
| Southwestern at Memphis | 1 | Vassar College | 3 |
| Spring Hill College | 1 | Vermont, University of | 2 |
| Stanford University | 11 | Villanova University | 7 |
| Stetson University | 1 | Virginia Military Institute | 1 |
| Stevens Institute of Technology | 1 | Virginia Polytechnic Institute | 6 |
| Suffolk University | 2 | Virginia, University of | 23 |
| Swarthmore College | 2 | Wabash College | 1 |
| Sweet Briar College | 2 | Wake Forest University | 1 |
| Syracuse University | 13 | Washburn University of Topeka | 1 |
| Taiwan Provincial Chung Hsing University | 1 | Washington College | 8 |
| Temple University | 6 | Washington and Jefferson College | 10 |
| Tennessee, University of | 3 | Washington and Lee University | 1 |
| Texas A&M University | 4 | Washington State University | 8 |
| Texas Technological College | 1 | Washington University | 8 |
| Texas, University of, at Austin | 14 | Washington, University of | 4 |
| Tokyo University of Foreign Studies, Japan | 1 | Wayne State University | 4 |
| Toledo, University of | 2 | Wellesley College | 1 |
| Trinity College, Conn. | 1 | Westhampton College | 4 |
| Trinity College, D.C. | 1 | Wesleyan University | 1 |
| Trinity University | 2 | West Virginia State College | 3 |
| Tufts University | 8 | West Virginia University | 1 |
| Tulane University of Louisiana | 4 | Western Kentucky University | 3 |
| Tulsa, University of | 1 | Western Michigan University | 1 |
| Union College, N.Y. | 1 | Westminster College, Mo. | 1 |
| U.S. Air Force Academy | 6 | Wichita State University | 6 |
| U.S. Coast Guard Academy | 5 | William and Mary, College of | 5 |
| U.S. Merchant Marine Academy | 1 | Williams College | 1 |
| U.S. Military Academy | 4 | Wilson College | 1 |
| U.S. Naval Academy | 10 | Wisconsin State University, La Crosse | 1 |
| U.S. Naval Postgraduate School | 1 | Wisconsin State University, Platteville | 1 |
| Universidad de Concepcion, Chile | 1 | Wisconsin State University, River Falls | 20 |
| Universidad Nacional de Asuncion, Paraguay | 1 | Wisconsin, University of | 1 |
| Utah State University of Agricul- ture and Applied Science | 2 | Worcester Polytechnic Institute | 2 |
| Utah, University of | 8 | Xavier University, Ohio | 24 |
| Utica College | 1 | Yale University | 1 |
| Vanderbilt University | 7 | Yeshiva University | 1 |
| | | Youngstown University | 1 |

Summary of Registration, Fall Semester 1968-69

| | 1st year | 2d year | 3d year | 4th year | Graduate |
|---------------|----------|---------|---------|----------|----------|
| Day | 304 | 213 | 217 | — | 38 |
| Evening | 128 | 115 | 64 | 79 | 275 |
| Total: 1,433 | | | | | |

APPENDIX: RECENTLY ESTABLISHED REGULATIONS

THE FOLLOWING UNIVERSITY REGULATIONS are under review and may be subject to change in connection with the establishment of judicial processes. Bulletins and handbooks incorporating any changes will be issued as appropriate.

The following resolution, submitted by the University Senate, was approved by the University's Board of Trustees on October 19, 1968:

Whereas, safety and order are essential preconditions of the learning process, and indeed of the very concept of a university; and

Whereas, The George Washington University is committed to protection of free speech and freedom of assembly, and to safeguarding the right of lawful protest on campus; and is committed equally to maintaining the peace and safety of the campus, in the knowledge that all rights are in jeopardy when violence and civil disorder prevail over law and reason;

Now, therefore, be it resolved by the Senate of The George Washington University: that in the event a demonstration at this University exceeds the bounds of free assembly and lawful advocacy, and demonstrators are engaging in unlawful acts which cause or imminently threaten injury to persons or property, or which obstruct or interfere with normal and necessary University activities, this body affirms the authority of the President, or other University officials designated to act in his absence, to take such reasonable steps, if possible after consultation with the Chairman of the Executive Committee of the University Senate and the President of the Student Body, as are required to restore and preserve order; including, if deemed necessary and appropriate, suspension of students or faculty engaging in such acts, and use of such law enforcement personnel as are needed to effect the removal, arrest, and prosecution of law violators. Any such suspension shall be reviewed by an appropriate tribunal as soon after order is restored as is practicably possible.

The following was approved by the University's Board of Trustees on October 19, 1968:

Any student suspended from The George Washington University on the grounds of exceeding the bounds of free assembly and lawful advocacy shall have his suspension reviewed by the Hearing Committee on Student Affairs of The George Washington University as soon after order is restored as is practicably possible.

The following resolution, submitted by the Student Life Committee, was approved by the University's Board of Trustees on October 19, 1968:

Be it resolved that The George Washington University: affirms its traditional commitment to freedom of expression (a) by continuing to permit business and government organizations which are recruiting employees to conduct their activities at designated places on campus, and (b) by placing no obstacle to students who may wish to protest the presence of such recruiters, provided, however, that such protest shall be orderly and shall not impede or disrupt the recruiter in his activities.

The University affirms its place as a forum for the free exchange of ideas (a) by assuring that guests invited to speak on this campus at duly scheduled meetings shall have the right to appear and to be heard, and (b) by sanctioning the freedom of students to express dissent from the views of the speaker, provided, however, that that expression of dissent be orderly and nonobstructive.

The University distinguishes between orderly protest and resistance-by-obstruction; it accepts the former as a legitimate expression of dissent while rejecting the latter as an abridgement of the freedoms of the individuals who may be its object.

The following was approved by the University's Board of Trustees on October 19, 1968:

The George Washington University is opposed to discrimination based on race, color, or creed. Such discrimination may have appeared in campus organizations in the past. In the future, however, no organization can be recognized or supported by the University unless it provides continued assurance of nondiscrimination in membership practices and in intent, considered adequate by relevant committees and officers of the University.

The following was approved by the University's Board of Trustees on October 19, 1968:

The University cannot condone violations of law, including violation of those laws which proscribe possession, use, sale, or distribution of certain drugs. Members of the academic community should know that administrative action, which may include dismissal from the residence halls, revocation of other privileges, or suspension or dismissal from the University, may be taken in order to protect the interests of the University and the rights of others.

The Board of Trustees reaffirms the responsibility of the President and the Faculty to continue to implement this policy.

The following resolution, submitted by the University Senate, was approved by the University's Board of Trustees on January 16, 1969:

Be it resolved by the Senate of The George Washington University: Any member of the University (including as members of the University all persons having a formal connection with the University)

(a) who engages in conduct that unreasonably obstructs teaching, research, and learning, or

(b) who unreasonably obstructs free access to members or guests of the University or to University buildings, or

(c) who disobeys general regulations of the University, or

(d) who damages University property or injures members or guests of the University,

may be punished for his conduct by dismissal from the University, or by some lesser disciplinary action, through procedures established within the University for the government of its members.

In order to insure due process, any student subject to dismissal or other disciplinary action on the grounds of violating any of the premises of this resolution shall have, at his discretion, the right of review of the action by the University Hearing Committee on Student Affairs.

INDEX

A

- Academic status of the University, 78
- Academic work load, 35
- Accident insurance, 42-43
- Administrative law—economic regulation:
 - Courses, 53-55
 - LL.M. specialization, 15
- Administration, officers of, 80
- Admission:
 - Continuing legal education students, 25
 - J.D. program, 24-25
 - Master's and doctoral programs, 24, 25
 - Students from foreign institutions, 19, 24-25
 - Test, law school, 10, 24
 - Unclassified students, 24, 25
- Advanced standing, J.D. degree, 10
- Alumni association, 73-75
- Annual issues of the *University Bulletin*, 128
- Appendix: recently established regulations, 123-24
- Application:
 - For admission, 24-25
 - For graduation, 38
 - For room reservation, 27, 41
- Assistantships, research, 31
- Attendance, 35
- Awards, 33

B

- Bar Association, Student, 14-15
- Bar examination, New York, 23
- Bar review course, 35

C

- Calendar, 1969-70, 4-5
- Case Club, Van Vleck, 14-15
- Changes in program of studies, 35
- Coif, Order of the, 15
- Computer Center, 40
- Computers-in-Law Institute, 71
- Conduct, 123-24
- Consortium of Universities of the Washington Metropolitan Area, Inc., 17
- Continuing legal education, 21, 25
- Continuous registration, 27, 38
- Corporation Law:
 - Courses, 55-56
 - LL.M. specialization, 15
- Courses of instruction, 45-70
 - Advanced, 53-70
 - For J.D. candidates:
 - Elective, 47-53
 - Required, 45-47
- Credit hours, 45
- Credit/no credit option, 36
- Credit, summer school, 38
- Curriculum, J.D., 11-13
- Dishonesty, academic, 39
- Dismissal of students, 40, 123-24
- Dissertation, S.J.D., 17-18
- Doctor of Juridical Science, degree of, 15, 17-18, 20, 27
- Dormitories, 41
- Day division, 12, 23
- Degree requirements:
 - Foreign students, 20
 - J.D. program, 11-13, 20
 - LL.M. program, 16-17, 20
 - M.Comp.L. programs, 20
 - S.J.D. program, 17-18, 20
- Degrees conferred, 86-94
 - February 1969, 93-94
 - June 1968, 86-91
 - September 1968, 91-92

E

- Emeriti, Professors, 81
- Employment, student, 43
- English, test of, as a foreign language, 19
- Entering classes, 10
- Entrance requirements:
 - J.D. program, 10-11, 19
 - LL.M. program, 16, 19-20
 - M.Comp.L. programs, 19
 - S.J.D. program, 17, 20
- Evening division, 13, 23
- Examinations, 23, 36
 - Research paper in lieu of, 35-36
- Exclusion and probation for poor scholarship, 37-38

F

- Faculty, 81-85
- Fees, 27-28
 - Payment of, 28-29
 - Residence hall rates, 41
- Fellows, 85
- Fellowships, 32-33
- Financial aid, 29, 31-33
- Financial regulations, 28-30
- Food service, 41
- Foreign students, degree programs for, 18-20

G

- George Washington Law Association, 73-75
- Government Contracts Program, 71
- Government procurement law:
 - Courses, 56-57
 - LL.M. specialization, 15
- Grades, 37
- Graduate courses in other departments, 16-17
- Graduation:
 - Fees, 27
 - Requirements, 38

H

- Health services, 42-43
- History of the National Law Center, 7-8
- History of the University, 77-78
- Honorary Trustees, 79
- Honors, 11
- Hours of instruction, 23, 45

I

- Insurance, health and accident, 42-43
- Institutions in which Law Center students earned degrees, 119-22
- International Law Society, 15

J

- Journal of Law and Economic Development, The*, 14
- Juris Doctor program, 10-15

L

- Labor law:
 - Courses, 57-58
 - LL.M. specialization, 15
- Law and Economic Development, The Journal of*, 14
- Law and poverty:
 - Courses, 58-59
 - LL.M. specialization, 15
- Law, psychiatry, and criminology:
 - Courses, 59-61
 - Institute of, 72
 - LL.M. specialization, 15
- Law Review*, 12, 13-14
- Law school admission test, 10, 24

- Law, science, and technology:
 Courses, 61-62
 LL.M. specialization, 15
 Program in, 72
 Legal aid program, 15
 Legal education, continuing, 21, 25
- M**
- Master of Comparative Law, degree of, 18, 19, 20
 Master of Laws, degree of, 15-17, 19-20, 20
- N**
- Natural resources law:
 Courses, 62-63
 LL.M. specialization, 15
- O**
- Objectives of the Center, 9
- P**
- Patent and trade regulation law:
 Courses, 63-64
 LL.M. specialization, 15
 Patent law, 12
 Patent, Trademark, and Copyright Research Institute, 72
 Placement service, 43
 Poverty, law and:
 Courses, 58-59
 LL.M. specialization, 15
- R**
- Readmission, 25
 Readmitted student, 26
 Refunds, 29-30
 Registration, 25-26
 Regulations, 35-40, 123-24
 Financial, 28-30
 Release of student information, policy on, 39
- S**
- Scholarship, 11, 16, 20
 Scholarships, 31
 Special programs in research and instruction, 71-72
 Staff of instruction, 81-85
 Student Bar Association, 14-15
 Student employment, 43
 Student information, release of, 39
- Legal writing, 12
 Library, 24
 Officers, 80
 Loan funds, 29, 32
 Location of the National Law Center, 8
 Lost and found, 40
- Master's thesis, 16
 Military leave, 39
- New York bar examination, 23
- Order of the Coif, 15
- Prizes, 33
 Probation, 37-38
 Projected tuition increases, 28
 Property responsibility, 40
 Provisional students, 18
 Public international and comparative law:
 Courses, 64-66
 LL.M. specialization, 15
- Research and instruction, special programs in, 71-72
 Research assistantships, 31
 Research paper, 35-36, 45
 Research study opportunities, 33
 Residence halls, 41
 Residence requirements, 11, 16, 17, 20
 Rules, right to change, 39
- Student services, 41-43
 Students registered, spring 1969, 94-118
 Summary of registration, fall semester, 1968-69, 122
 Summer school credit, 38
 Summer term, 23
 Suspension, 123-24

T

Taxation:

Courses, 66-68

LL.M. specialization, 15

Teaching Fellows, 85

Tests:

English as a foreign language, 19

Law school admission, 10, 24

Thesis. Master's, 16

Transcripts of record, 19, 28, 38

Trial Practice Court, 12

Trustees, Board of, 78-79

Tuition:

Deposit, 11, 27

Fees, 27

Projected increases, 28

Refund of, 29-30

U

Unclassified students, 20, 25

University, academic status of, 78

University Center, 41-42

Fee, 27

University Computer Center, 40

University, history of, 77-78

University, location of, 78

University, organization of, 78

Urban Law Institute, 72

Urban legal studies:

Courses, 68-69

LL.M. specialization, 15

V

Van Vleck Case Club, 14-15

Veterans education, 43

W

Withdrawals, 29-30

ANNUAL ISSUES OF THE UNIVERSITY BULLETIN

Requests for the following publications must include your zip code and should be addressed as indicated.

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SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS: Bachelor of Arts (B.A.), Certificate of the Institute for Sino-Soviet Studies (Cert. of I.S.S.S.), Master of Arts (M.A.), and Master of Science in International Affairs (M.S. in I.A.)

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THE SCHOOL OF MEDICINE, 1825

THE NATIONAL LAW CENTER, 1865

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE, 1884

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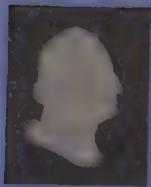
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THE DIVISION OF UNIVERSITY STUDENTS, 1930

THE SUMMER SESSIONS, 1910

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THE GEORGE WASHINGTON UNIVERSITY BULLETIN



SCHOOL
OF
ENGINEERING
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APPLIED SCIENCE



1969-1970

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Information concerning courses of instruction, programs, and faculties of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on page 118. Zip code is essential for mailing catalogues.

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Education.....Dean of The School of Education
Engineering and Applied Science.....Dean of The School of Engineering
and Applied Science

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**THE SCHOOL OF ENGINEERING
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WASHINGTON, D.C. 20006



CONTENTS

| Page | |
|------|---|
| 5 | The Calendar |
| 6 | A Message from the Dean |
| 9 | The Study of Engineering |
| 12 | The School of Engineering and Applied Science |
| 12 | History |
| 13 | Academic Status |
| 13 | Undergraduate Study |
| 27 | Graduate Study |
| 27 | The Master's Programs |
| 36 | The Doctoral Program |
| 38 | The Center for Measurement Science |
| 40 | Continuing Engineering Education Program |
| 40 | The GWU—NASA-Langley Graduate Program |
| 41 | Institute for the Study of Fatigue and Structural Reliability |
| 42 | Administration |
| 43 | Advisory Council |
| 44 | General Information |
| 44 | Registration |
| 45 | Fees and Financial Regulations |
| 49 | Financial Aid |
| 54 | Prizes |
| 55 | Regulations |
| 59 | Cooperative Programs |
| 60 | University Computer Center |
| 60 | The Speech and Hearing Clinic |
| 61 | The Reading Center |
| 61 | Veterans Education |
| 62 | Alumni Associations |
| 63 | Student Life |
| 72 | The University |
| 72 | History and Organization |
| 73 | The University Libraries |
| 74 | The Board of Trustees |
| 75 | Officers of Administration |
| 76 | Conversion Table for Renumbering Courses in Engineering and Applied Science |
| 77 | Courses of Instruction |
| 77 | Applied Science |
| 79 | Electrical Engineering |
| 92 | Engineering Administration |
| 96 | Engineering Mechanics |
| 109 | Measurement Science |
| 112 | Faculty and Staff of Instruction |
| 118 | Annual Issues of the University Bulletin |
| 119 | Index |

1969

JULY

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| 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | | | | |

OCTOBER

| S | M | T | W | T | F | S |
|----|----|----|----|----|----|----|
| | | | | 1 | 2 | 3 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 |

NOVEMBER

| S | M | T | W | T | F | S |
|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | | | | | |

DECEMBER

| S | M | T | W | T | F | S |
|----|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | 31 | | | |

THE CALENDAR 1969-70

1969-70 FALL SEMESTER

| | |
|------------------------|--|
| <i>September 12</i> | Orientation for students from foreign countries <i>Friday</i> |
| <i>September 15</i> | Placement tests for entering students <i>Monday</i> |
| <i>September 16-17</i> | Advising for all students <i>Tuesday-Wednesday</i> |
| <i>September 17</i> | Orientation Assembly for all new students <i>Wednesday</i> |
| <i>September 18-20</i> | Registration—Tompkins Hall of Engineering <i>Thursday-Saturday</i> |
| | Application for February graduation due as part of registration |
| <i>September 23</i> | Classes begin <i>Tuesday</i> |
| <i>November 11</i> | Veterans Day (holiday) <i>Tuesday</i> |
| <i>November 26</i> | Thanksgiving recess begins after last class <i>Wednesday</i> |
| <i>December 1</i> | Classes resume <i>Monday</i> |
| <i>December 8</i> | D.Sc. dissertations of February candidates due <i>Monday</i> |
| <i>December 20</i> | Last day of fall-semester classes <i>Saturday</i> |
| <i>December 20</i> | Christmas recess begins after last class <i>Saturday</i> |
| <i>January 5</i> | Master's theses of February candidates due <i>Monday</i> |
| <i>January 5-9</i> | Fall-semester reading period <i>Monday-Friday</i> |
| <i>January 10-22</i> | Examination period <i>Saturday-Thursday</i> |

1970 SPRING SEMESTER

| | |
|----------------------|--|
| <i>January 26</i> | Placement tests and waiver examinations <i>Monday</i> |
| <i>January 26-28</i> | Advising for all students <i>Monday-Wednesday</i> |
| <i>January 29-31</i> | Registration—Tompkins Hall of Engineering <i>Thursday-Saturday</i> |
| | Application for June graduation due as part of registration |
| <i>February 2</i> | Spring-semester classes begin <i>Monday</i> |
| <i>February 21</i> | Winter Convocation <i>Saturday</i> |
| <i>February 23</i> | Washington's Birthday (holiday) <i>Monday</i> |
| <i>March 21</i> | Spring recess begins after last class <i>Saturday</i> |
| <i>March 31</i> | Classes resume <i>Tuesday</i> |
| <i>March 31</i> | D.Sc. dissertations of June candidates due <i>Tuesday</i> |
| <i>April 24</i> | Master's theses of June candidates due <i>Friday</i> |
| <i>*May 9</i> | Last day of spring-semester classes <i>Saturday</i> |
| <i>May 11-15</i> | Spring-semester reading period <i>Monday-Friday</i> |
| <i>May 16-28</i> | Examination period <i>Saturday-Thursday</i> |
| <i>May 30</i> | Memorial Day (holiday) <i>Saturday</i> |
| <i>June 7</i> | Commencement <i>Sunday</i> |

1970 SUMMER SESSIONS†

1970-71 FALL SEMESTER

| | |
|------------------------|---------------------------------------|
| <i>September 17-19</i> | Registration <i>Thursday-Saturday</i> |
|------------------------|---------------------------------------|

* Courses offered by the School of Engineering and Applied Science, as well as certain courses in other divisions of the University, may be extended through the reading period.
† Dates will be announced in the Calendar of the 1970 Summer Sessions Catalogue published December 1969.

TO ALL PROSPECTIVE STUDENTS:

This catalogue describes in detail the programs and requirements for undergraduate and graduate study in the School of Engineering and Applied Science. It also includes descriptions of courses; a listing of the faculty and staff; and information on fees, financial regulations and aid, and student services and activities.

The School of Engineering and Applied Science is a professional school in a university comprised of eight degree-granting schools and colleges. The environment of the Nation's Capital is very favorable for the intellectual and cultural development of the student. The metropolitan Washington area contains the second largest concentration of research and development in the United States, and the engineering component of this activity is similarly extensive.

The School of Engineering and Applied Science has been in continuous session since 1884, and offers programs of study leading to Bachelor's, Master's, and Doctor's degrees. Its prime objective is to educate the student so that he will have the precious asset of a well-trained mind which may be applied to the attainment of our many national objectives. In these changing times, it is necessary to search for quality. Students and faculty are required to perform a certain amount of soul-searching. All should have the opportunity of assisting in the planning and implementation of educational programs. Examination is being made periodically of the School's objectives and how they relate to those established by the American Society for Engineering Education. Emphasis includes such items as the student's basic and advanced levels of education and his role in present and future society.

The atmosphere of the School is one of serious-minded effort toward mature development. Being a small school, it recognizes the individual as the single most important element in the educational process. The student body, undergraduate and graduate, has a primary interest in design, research, development, and management in both scientific and engineering activities. Many alumni of the School are successfully engaged in all fields of engineering—in science, management, government, and education.

The philosophy of the School, which might be summarized as "education for creativity, not conformity," has through the years reflected the many subtle and profound changes in the engineering profession.

The faculty of the School and I look forward to providing a closer and more fruitful relationship with you. If you need additional information, please do not hesitate to call upon the Department Chairmen or me.

HAROLD LIEBOWITZ
Dean
School of Engineering and
Applied Science



Harold Liebowitz, Dean of the School of Engineering and Applied Science



THE STUDY OF ENGINEERING

THE MEANING OF ENGINEERING AND APPLIED SCIENCE

ENGINEERING IS A BROAD PROFESSION. Its responsibilities and activities extend into every aspect of industry and research, and into many fields of commerce and the arts. Engineers have faced and continue to face problems in the production and distribution of all types of manufactured products, including the design of mechanical, electrical, and chemical processes, of equipment, and of plants in which such products are made; in the design and construction of an infinite variety of structures such as bridges, tunnels, harbors, and dams; in aircraft design and construction, including complicated electronic equipment for control, guidance, and communication; in the operation of transportation systems; in the wide spectrum of activities existing in the automotive industry; in the missile and space programs; in the generation and transmission of power; in the modern phases of communication; in the control of traffic; in city planning; in public health and sanitation as it affects the environment; and in ventilation and refrigeration. This list of applications is far from exhaustive; it does indicate, however, that engineering is a broad profession in which there are many specialists.

THE RELATIONSHIP OF ENGINEERING AND SCIENCE

In any discussion of "engineering and applied science," it is profitable to emphasize the distinction between engineering and science. The President's Scientific Advisory Committee points out that the engineer and scientist each play an important role on a team. "The scientist is one who seeks to extend the boundaries of knowledge in his chosen field. The engineer has the task of combining the knowledge of science with his knowledge and awareness of the needs and limitations of human beings and of a human society to develop and create things for human use. . . . While scientists have uncovered the basic knowledge, it is the engineers who have created the tangible tools, materials, and products that have revolutionized our daily lives, our community living, and our national defense." Scientists primarily produce knowledge; engineers primarily produce things.

The engineer frequently refines scientific knowledge (thus the term "applied science") to shape it to his purposes and society's needs. He possesses capabilities that are not usually a part of scientific training: he must know how

to proceed by analysis, design, and development of manufacturing, of construction, of electronics, and of operations in general using scientific knowledge as well as his own; and, since economical use of resources is a necessity, he must deal with public policy, finance, human relations, and economic considerations.

The work of engineers is a focal point at which scientific knowledge, the use of such knowledge as a service to society, financial material, human resources, and society's needs are interrelated. The engineer is concerned, therefore, with the means for operating a dynamic society. He must consider not only whether the state of the art (the knowledge that exists) will enable him to create a workable product, but how the product can be built, who will use it, how such use will affect what he builds, and the environmental conditions under which it will operate.

THE PROFESSIONAL ENGINEER

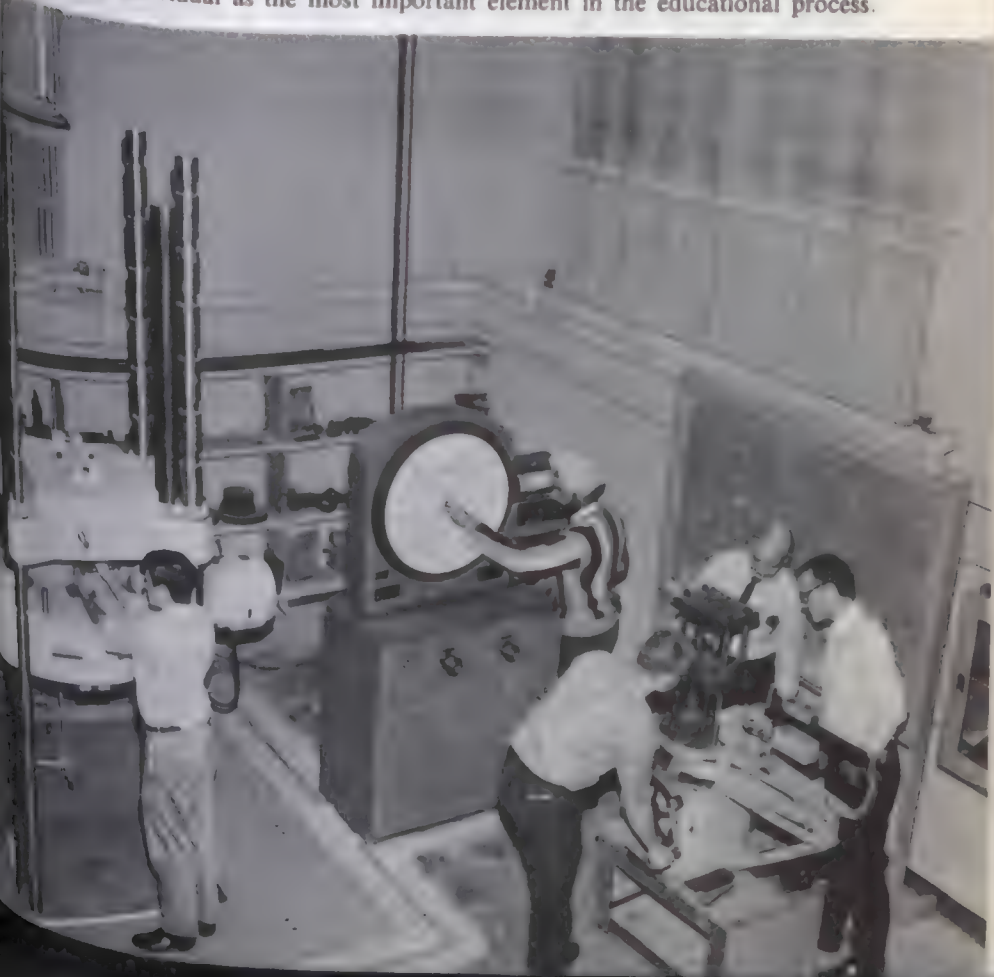
Engineers are concerned with the quality and security of human life—problems of great intellectual interest. Engineer, as the term is used in this catalogue and as it is commonly understood in our society, refers to the person who makes use of the advances of science and technology in an economically feasible manner for the benefit of society. This process is complex and challenging. Although the content of engineering curricula is certainly scientific, the engineer has not lost his sense of purpose in serving as an intellectual agent in the practical world. This responsibility of the engineer arises from the breadth of the implications of engineering for the whole of society as well as from the depth of the requirements for competence. Technology has radically rearranged human life in our time. There are many who believe that, although the threshold of space has been crossed, the union of medical and engineering practice has been achieved, and breakthroughs have been made in other areas, this impact of engineering on modern life is just a modest preview of the engineering of tomorrow.

THE ENGINEERING STUDENT

Rapidly changing and advancing engineering activity requires an education for the future based on fundamental principles of science useful in applications to a dynamic, advanced society. In the fields of engineering and applied science there is no substitute for demonstrated ability and competence to solve the problems faced. Without question, achievement in particular courses of study is important, but it is less important than the ability to analyze and interpret all the aspects of a problem, to formulate solutions, and to evaluate those solutions in the light of all available information. The undergraduate program of the School of Engineering and Applied Science provides a periodic evaluation and appraisal by a faculty adviser of the student's ability and progress.

The curricula of the School of Engineering and Applied Science are founded on one basic principle—to assist the student in preparing for a career in engineering and applied science. This philosophy requires that the student master the principles on which future practice will be based and that he receive an education centered on that meaningful junction between theory and practice so that throughout his professional life he can follow the interests and opportunities that develop in many directions.

It should not be assumed, however, that only the intellectual elite should consider the study of engineering and applied science. Engineering, like medicine, law, education, science, history, government, and other disciplines, does need top scholars. But in any of these areas, even though the prospective student has not achieved high scholastic standing, if he is genuinely interested in the subject, he can probably find a place for himself. Those who are moderately well-endowed with mental ability and who are interested and willing to work will find in engineering and applied science a rich and varied field of study which can lead to satisfaction and success. It is difficult to make generalizations in this area, but if a student has demonstrated an aptitude for mathematics, science, and English, he will probably find the work of engineers and the study of engineering and applied science satisfying and challenging. Innate intellectual curiosity and the desire to learn and to work hard are good indicators of success. College Board examinations may reveal the capacity to manage further study in mathematics and science and their applications to engineering. No school or college can "give" an education. It can offer only the opportunity to "get" an education. The George Washington University's School of Engineering and Applied Science is a small school which provides an opportunity for close liaison with faculty members, as well as the opportunity to participate in matters of student concern—in organizations, by working on the magazine, and through other student activities. The School recognizes the individual as the most important element in the educational process.



THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE

HISTORY

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE was organized October 1, 1884, as the Corcoran Scientific School of Columbian University and was situated in the University Building then at 15th and H Streets, N.W. The School was named in honor of William W. Corcoran, Trustee and President of the Corporation from 1869 to 1888. Day and evening courses were offered in Literature, Science, and Technology and led to the degrees of Bachelor of Science, Civil Engineer, Mechanical Engineer, and Mining Engineer. The School was among the first to accept women for degree candidacy in engineering.

In 1903 the Corcoran Scientific School, the School of Graduate Studies, and the Columbian College were merged into a single Department of Arts and Sciences. Engineering degrees were made graduate.

Administrative changes led to The Washington College of Engineering being initiated in 1905 as one of the several semi-independent undergraduate colleges of the University, each with its own Board of Trustees. The College provided instruction leading to undergraduate degrees in engineering and architecture.

In 1909 the name of the College was changed to the College of Engineering and Mechanic Arts, and the curricula were revised to give the student a thorough understanding of the theory underlying engineering practice. Emphasis was placed on the development of a knowledge of scientific principles upon which the student could build and by which he might solve new problems as they are met in practice.

The name of the School was changed again in 1914 to the College of Engineering and later to the School of Engineering. Architecture was dropped from the curriculum, and degrees were limited to the field of engineering. However, the primary emphasis upon principles rather than technology which had characterized the School since 1903 was continued and has remained to this day as one of the important distinguishing features of the School.

In 1962 the name of the School became the School of Engineering and Applied Science.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The curricula in Civil Engineering, Electrical Engineering, and Mechanical Engineering are accredited by the Engineers' Council for Professional Development.

Undergraduate Study

THE UNDERGRADUATE PROGRAM is intended to provide a solid foundation in the basic principles, concepts, and techniques underlying engineering and applied science, on which the individual may build technical competence in a variety of areas as his professional career develops. It is preparation for a career in engineering or applied science, as it exists today and as it may develop in the future.

Undergraduate study is the formal beginning of a life-long continuing program of education. The School provides an environment that encourages and fosters the attitudes and disciplines essential to professional growth. The graduate, when he receives his Bachelor's degree, is prepared for productive work in his chosen field; he is also prepared for further development and progress, both formal and informal. The School insists that the undergraduate include in his study courses in the humanities and social sciences, to the extent necessary to develop a reasonable understanding and appreciation of these areas of knowledge. Cultivation in the intricacies of society and comprehension of human values are sought for the student, in complement to his scientific and technical literacy.

Admission indicates the student possesses at least minimum preparation and the probable capacity to meet the unusual educational demands of this School. However, the nature of the approach requires the student's real effort, intellectual discipline, and maturity. Because the School can predict neither the student's response to the demands made on him nor the program he should follow for his most effective development, it has designed an undergraduate program that offers a variety of experiences through which the student may find his own best path to maturity and growth in educational development.

The School is a place for learning: for experiencing adventures of the mind and of the hands; for the formulation, exchange, and exploration of ideas. During his undergraduate years the student is led to strengthen his skills in analysis and his talent for creative activity, through liberal use of project-type laboratory work. Independent thought and original ideas receive higher evaluation in the appraisal of student achievements, than the rote recital of information. The undergraduate program provides periodic evaluation and appraisal by a faculty adviser of the student's ability and progress.

ADMISSION TO UNDERGRADUATE STUDY

The School admits those applicants who can benefit themselves and society by disciplined intellectual effort in its environment.

Admission is the first selective step in a long series of qualifying steps the student will take in his progress toward professional competence in engineering, and indicates the School's belief that the applicant has at least the minimum preparation and ability to complete the curriculum successfully.

The applicant must be of good character and must have an academic background appropriate for the program of studies contemplated.

APPLICATION FOR ADMISSION

An applicant for admission obtains from the Office of Admissions of the University an application blank which he must fill out completely and return with the \$25* application fee.

STUDENTS FROM U. S. INSTITUTIONS

Records presented become the property of the University and *cannot* be returned.

FRESHMAN ADMISSION

Consideration for admission is based on the following:

1. An acceptable certificate of graduation from an accredited high school showing at least fifteen units†;
2. The principal's statement that the applicant is prepared to undertake college work;
3. Scores on the following College Entrance Examination Board tests: the Scholastic Aptitude Test, the English Composition Achievement Test, and a Level I (Standard) or Level II (Intensive) Mathematics Test—Level I preferred.

The qualifications of applicants who, because of unusual circumstances, do not meet the above requirements will be considered by the School, which may prescribe admission tests.

Nine and one-half of the fifteen units required for entrance must be distributed as follows: three in English, two in algebra, one in plane geometry, one-half in plane trigonometry, one in physics or chemistry, and two in one foreign language or history. General science may *not* be counted in satisfaction of the science requirement but may be counted as an elective unit.

It is recommended that *both* physics and chemistry be studied in high school. A high school course in solid geometry is recommended as a firm foundation for college mathematics.

An applicant must arrange to have sent directly *from his school to the Office of Admissions* the academic record of his first seven terms in secondary school, together with a personal evaluation and recommendation from his principal. This information may be supplied on a form provided by the University or on a standard form used by the secondary school provided all essential information is included.

* Application fee must be by check or postal money order, payable to George Washington University. The application fee is waived for a student applying for readmission who was registered as a degree candidate at the time of his last registration at this University and has not since registered at another institution.

† A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods of prepared classroom work.

Quantitative Deficiency.—A graduate of an approved high school who lacks not more than two units of the required subjects and who presents fifteen acceptable units may be admitted to a prescribed program which includes courses to make up his deficiencies.

REGULAR ADMISSION

Applicants for regular admission who wish to begin study in the fall semester should formulate plans early in the senior high school year. The University prefers to have applications submitted during the fall term of the senior high school year, although applications will be accepted up to March 1. Students graduating at mid-term wishing to begin study in the spring semester *must* apply no later than December 1. Applications and all required credentials of students wishing to begin study in either the first or second term of the summer session *must* be received prior to March 1.

EARLY DECISION PLAN

For the qualified applicant who wants to begin college in the fall semester and receive an early guarantee of space, the University offers an early decision plan. The applicant need *only* indicate on the application form that he wishes an early decision and have all required credentials in the Office of Admissions prior to November 1. A decision will be mailed by December 15. The declaration of intent to attend the University and a \$200 tuition deposit (plus an additional \$200 housing deposit for resident students), nonrefundable, *must* be submitted by January 15 to reserve space.

If the applicant is accepted under the early decision plan but fails to submit the deposit by January 15, he will be reconsidered along with all other applicants, for regular admission, as described above.

TRANSFER STUDENTS

Transfer students from other institutions *must* submit application and required credentials prior to August 15 for the fall semester, December 15 for the spring semester, May 1 for the Summer Sessions.

The transfer student must be in good standing as to scholarship and conduct. He must be eligible to return to the last previously attended institution in the semester for which he seeks admission to this University.

An applicant who has attended one or more institutions of higher learning must request *each* registrar to mail directly to the Office of Admissions a transcript of his record, *even though credits were not earned*.

If an applicant has fewer than 60 semester hours of acceptable work (C or better on academic work from an accredited institution), he must request that his high school record and College Entrance Examination Board Test scores be sent to the Office of Admissions.

STUDENTS FROM FOREIGN INSTITUTIONS

Application, required records, and scores on the *Test of English as a Foreign Language* (see below) *must* be received from all foreign applicants no later than March 1 for the fall semester and November 1 for the spring semester.

REQUIRED RECORDS

Applicants must request all educational institutions attended to send directly to the Office of Admissions official credentials listing subjects studied, grades received, examinations taken, and degrees received. Certified copies of diplomas and certificates from secondary schools and all colleges and universities attended are required. Records of state examinations and certificates are also needed. All records become the property of the University and cannot be returned.

LANGUAGE TEST

Students whose native tongue is not English are required to take the *Test of English as a Foreign Language*. Students are responsible for making arrangements for taking the test and should address inquiries to: TOEFL, Educational Testing Service, Princeton, New Jersey 08540, U.S.A. The completed application form should be returned to the Testing Service at Princeton well in advance of the beginning of the semester for which the applicant seeks admission. A \$10 test fee, which should be remitted with the application, entitles the student to have his test score sent to three different institutions. Registration for the *Test of English as a Foreign Language* does not constitute application for admission to George Washington University.

The Bulletin of Information, obtainable without charge, contains a description of the test as well as rules regarding application, fees, reports, and the conduct of the test; lists of examination centers; examination dates; and application blank. On the application for the test, the student should specify that the scores be sent to the Office of Admissions, George Washington University, Washington, D.C. 20006.

If additional tests are prescribed, necessary instructions will be sent to the applicant by the Office of Admissions.

READMISSION

A student previously registered in the University who was not registered on campus during the immediately preceding semester must apply for readmission. Final dates for applying are the same as those for "Transfer Students," see page 15. If the student applies as a degree candidate and was previously registered as a nondegree student, or if he has attended one or more higher institutions during his absence from the University, he must have complete, official transcripts sent to the Office of Admissions from each institution attended before his application will be considered. Applications for readmission are considered on the basis of regulations currently effective.

The application fee is waived for a student applying for readmission who was registered as a degree candidate at the time of his last registration at this University and has not registered at another institution since his last registration at this University.

TUITION DEPOSIT

Upon notification of acceptance, a \$100 tuition deposit (\$200 for students admitted by early decision, see page 15) will be required of all full-time students including those readmitted. The deposit is credited toward tuition and is not refundable.

ADVANCED STANDING**CREDIT FOR ADVANCED PLACEMENT EXAMINATIONS**

Advanced standing may be granted for study at the collegiate level in advanced courses in an approved secondary school, if substantiated by satisfactory performance in the appropriate Advanced Placement Examination of the College Entrance Examination Board. Arrangement for the examination is the responsibility of the applicant and should be made with the College Board, Advanced Placement Examinations, Educational Testing Service, 20 Nassau Street, Princeton, N.J. 08540 or 1947 Center Street, Berkeley, Calif. 94707.

The applicant must request the examining service to submit the test papers and scores to the Office of Admissions. Consideration is given to both the quality of performance on the examination and the quality and content of the course of study completed by the applicant. Credit may be withheld pending satisfactory completion of higher-level courses in the same field.

Total credit that may be so granted is up to 30 semester hours, not more than 8 semester hours of which may be in any one examination area.

CREDIT FROM HIGHER INSTITUTIONS

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be granted for transferred work only when it meets the requirements for the degree sought at this University, and subject to the general University regulations concerning satisfactory subsequent work. Work of low pass grade (D or the equivalent) will not be considered for transfer.

SERVICE SCHOOL CREDIT

A limited amount of credit earned in service schools since 1941 may be considered for assignment to qualified degree candidates in the School of Engineering and Applied Science. Veterans should submit to the Office of Admissions photostatic copies of their service school records, indicating courses successfully completed with sufficient identification of the course to locate it in the *Guide to Evaluation of Educational Experience in the Armed Forces*.

REGULATIONS

Regulations regarding REGISTRATION, FEES AND FINANCES are stated on pages 44-49; other University regulations, on pages 55-58.

ATTENDANCE

A student may not attend classes until registration is completed and fees due are paid. Regular attendance is required. A student may be dropped from any course for undue absence.

A student suspended for any cause may not attend classes during the period of suspension.

The student is expected to attend every meeting of the course in which he is registered, fully prepared to carry on the work required. The student is held

responsible for all work in the course, and all absences must be excused before provision will be made for him to make up the work missed. Excuses for absences from examinations which have been announced in advance can be obtained only by written application to the instructor in charge of the course.

ACADEMIC WORK LOAD

A full-time undergraduate student who is not on probation may register for no more than 20 semester hours. A student employed more than 24 hours a week who is not on probation may take no more than 10 semester hours. In exceptional cases these limits may be exceeded with the Dean's permission.

A student previously unemployed who accepts employment after registration must immediately report that fact to the Dean so that his schedule may be adjusted if necessary.

ADVISORY SYSTEM

The School of Engineering and Applied Science encourages a close faculty-student relationship. Every entering undergraduate student is assigned a permanent faculty adviser to assist him in orienting himself in the professional discipline. Faculty advisers counsel students on their programs of study, the achievement and maintenance of satisfactory scholastic performances, professional development, and extracurricular activity as part of the educational process. The adviser represents the student in all cases requiring faculty action.

Students must obtain their advisers' approval of programs of study prior to registration. Until a student has completed the work required for the degree he must consult his adviser in all academic matters. However, an adviser may not deny a student entry into any course or activity to which he is entitled under the regulations of the School.

All students are encouraged to discuss college problems with their advisers or instructors at any time; and parents or guardians are invited to consult with the Dean and advisers concerning any student problems.

Faculty advisers discharge their counseling duties in accordance with the high principles of their professional responsibility; however, the final responsibility for a student's action lies wholly with the student.

SCHOLARSHIP REQUIREMENTS

An undergraduate student must maintain a cumulative quality-point index of at least 2.00.

GRADES

Grades are mailed to the student through the Office of the Registrar at the close of each semester.

The following grading system is used: *A*, excellent; *B*, good; *C*, average; *D*, passing; *F*, failing; *CR*, credit. Whenever a grade has not been assigned, the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) is recorded.

An *I* (incomplete) grade is given by an instructor only for reasons satisfactory to the instructor and presented to him before the last day of classes for the semester in which the course is given. An *I* cannot be removed by repeating the course. An *I* cannot be made up after the lapse of one calendar year.

except by written permission of the Dean's Council. An *I* which is not removed within one calendar year is automatically changed to an *F*.

A student may not repeat for credit a course in which he has received a grade of *D* or above, unless required to do so by the department concerned. A written statement to this effect must be submitted to the Registrar by the Dean.

THE QUALITY-POINT INDEX

Scholastic standing is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours for which the student has registered, both based on the complete record in this University applicable to the degree objective of the student.

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered. Courses marked *W*, *I*, or *CR* are not considered in determining the index, except that courses marked *I* will be considered when a formal grade is recorded. Grades in courses taken at another institution are not considered in computing the quality-point index.

In order to graduate, a student must have a quality-point index of at least 2.00 in all work taken at this University, and accepted in the School of Engineering and Applied Science.

Mid-semester Warning.—At the end of the seventh week of each semester, instructors report to the Dean the names of students whose scholarship is unsatisfactory. On receipt of a warning notice the student must consult his instructor and his adviser immediately.

The adviser may prescribe diagnostic tests and/or remedial study to be completed before the end of the current semester.

Probation.—An undergraduate student whose quality-point index falls below 2.00 is placed on probation. This probation extends over the period in which the student completes a minimum of 12 semester hours of study and may be extended over a longer period.

A student on probation is required to follow a specified program of study, including remedial studies as prescribed, and is not eligible to participate in student activities.

Suspension.—An undergraduate student whose quality-point index is below 2.00 at the end of his probationary period is suspended. A student whose index falls below 2.00 after removal from probation is suspended.

A student suspended for poor scholarship may apply to be readmitted in the semester or summer session which begins next after an interval of one calendar year. A student readmitted after suspension is on probation. In no case will the probationary period after readmission exceed 24 hours of study. A student suspended twice for poor scholarship will not be readmitted.

HONORS LIST

The Faculty of the School recognizes meritorious scholastic achievement by an Honors List, containing the names of candidates for undergraduate degrees whose scholastic achievement satisfies all of the following requirements:

1. The candidate's quality-point index is equal to or exceeds 3.00 on a minimum of 13 semester hours in one semester.

2. No grade below C has been received during the qualifying period.
3. No disciplinary action has been taken in respect to the student.

The Honors List is prepared at the end of the fall and spring semesters and displayed in an appropriate public place in the School. A notation is made on the student's record each time his name is included in the List.

USE OF CORRECT ENGLISH

Any student whose written or spoken English in any course is unsatisfactory may be reported by the instructor to the Dean. The Dean may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the Dean.

GRADUATION REQUIREMENTS

See page 57 for general requirements for graduation.

Residence.—A minimum of 30 weeks and 30 semester hours must be completed in residence. Summer work may be counted. Unless special permission is granted by the Dean to study elsewhere, the work of the final year must be completed in residence.

HONORS

With distinction.—A Bachelor's degree may be conferred "with distinction," at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

Special honors.—A Bachelor's degree may be conferred with "special honors," at the discretion of the Faculty, for outstanding achievement in the student's senior year work on recommendation of the Faculty, under the following regulations:

1. The student must have his candidacy for special honors approved by the department chairman representing his major field not later than the beginning of his senior year.
2. The student must meet such other conditions as may be set at the time his candidacy is approved.
3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution.
4. To be eligible for special honors a student must have completed at this institution at least one-half of the work required for the degree.

THE CURRICULA

The four four-year curricula lead to the degree of Bachelor of Science, with parenthetical designation of the major; for example, Bachelor of Science (Electrical Engineering). Students who are deficient in preparation require a longer period; those who are admitted with advanced standing or who attend summer sessions can complete the requirements in less time.

The program of the first five semesters (2½ years) is common to all curricula and provides the essential broad base of scientific principles, mathematical techniques, and culture underlying the professional courses of the last three semesters.

A minimum total of 130 semester hours is required to qualify for the degree. However, students are encouraged to elect additional course work above the required minimum to the extent their interests and the School's offerings permit.

Degrees are offered in Civil Engineering, Electrical Engineering, Measurement Science, and Mechanical Engineering. Students in Electrical Engineering may select an area of concentration in Computer Science.

The student is assisted by his faculty adviser, who approves his program each semester prior to registration. For the guidance of the student and his adviser, every beginning student takes the School's placement examinations in English, Reading, Algebra, and Trigonometry. The student must take remedial work in any of these areas in which he is deficient, prior to enrollment in courses in the area of deficiency.

BASIC CURRICULUM

(Semester hours of credit are indicated in parenthesis following the name of the course)

First Semester

- Chem 11: General Chemistry (4)
 EE 51: Applications of Computers (3)
 Math 21: Calculus I (3)
 *Elective: Selected from humanities or social sciences (3 to 6)

Second Semester

- Chem 12: General Chemistry (4)
 Math 22: Calculus II (3)
 Phys 30: Introductory Modern Physics (4)
 Elective: Selected from humanities or social sciences (3 to 6)

Third Semester

- Math 23: Calculus III (3)
 Math 24: Calculus IV (3)
 Phys 31: Introduction to Theoretical Physics (2)
 Phys 51: Introduction to Experimental Physics (2)
 Elective: Selected from humanities or social sciences (3 to 6)

Fourth Semester

- Ap S 59: Introductory Analytical Mechanics I (4)
 Ap S 113: Engineering Analysis I (3)
 Phys 32: Introduction to Theoretical Physics (2)
 Phys 52: Introduction to Experimental Physics (2)
 Elective: Selected from humanities or social sciences (6)

* Students deficient in Physics take Physics 1 (4); students deficient in English take English 1x (3).

Fifth Semester

- Ap S 60: Introductory Analytical Mechanics II (4)
- Ap S 114: Engineering Analysis II (3)
- EE 11: Linear Networks I (3)
- EE 31: Fields and Waves I (3)
- ME 131: Thermodynamics (3)

CIVIL ENGINEERING

Civil engineering is the broad branch of engineering most closely related to daily human activities. Study in this area prepares for careers in the design of buildings, bridges, aircraft and missile frames, tunnels, and dams; the planning of cities; and research on new types of structures, new materials, and new methods of construction.

The concentration of study outlined below provides the essentials for beginning a career upon graduation, for registration as a professional civil engineer as required by law, and for continuing study at the graduate level.

First Five Semesters

See Basic Curriculum (pages 21-22)

Sixth Semester

- CE 121: Structural Theory I (3)
- CE 140: Materials Science (3)
- EE 20: Introductory Engineering Electronics (3)
- ME 126: Fluid Mechanics (3)
- ME 134: Dynamics of Linear Systems (3)
- Elective: Selected from humanities or social sciences (3)

Seventh Semester

- CE 122: Structural Theory II (3)
- CE 161: Earth Science (3)
- CE 165: Materials Engineering (3)
- CE 183: Urban Planning (3)
- CE 191: Structural Design I (3)
- ME 171: Mechanics of Deformable Solids I (3)

Eighth Semester

- CE 163: Environmental Engineering (3)
- CE 168: Soil Mechanics (3)
- CE 170: Hydraulic Engineering (3)
- CE 192: Structural Design II (3)
- CE 194: Design Projects (3)
- E Ad 140: Engineering Economics (3)

ELECTRICAL ENGINEERING

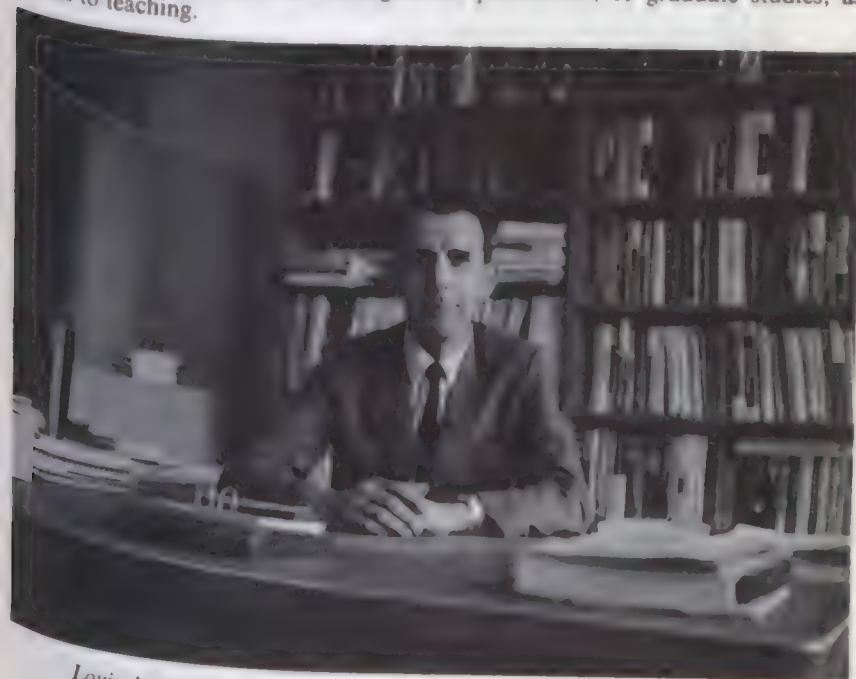
Electrical engineering is a branch of engineering in which practical as well as theoretical and scientific aspects are integrated to provide a well-balanced dis-

cipline. Basic sciences such as physics and mathematics form the roots on which electrical engineering builds to create a truly applied science and to develop the techniques necessary to solve problems. Analysis, synthesis, and design go hand in hand. The electrical engineering curriculum is designed to provide the student with such an integrated approach. The first two years of the basic curriculum are devoted to developing a sound foundation of basic sciences coupled with engineering sciences. The third year continues with engineering sciences and starts going deeper into electrical engineering. The fourth year is totally devoted to electrical engineering. At the fourth year the student has a choice of either following the regular electrical engineering curriculum or branching off into an area of concentration in computer science.

The Department of Electrical Engineering has recently acquired modern laboratory equipment, including its own computer. The student has an opportunity during his last year to work on individual projects where his ingenuity, coupled with faculty advice and guidance, permits him to concentrate in areas such as computers, communications, microwaves, control, electronics, medical engineering, circuits, and others.

The scheduling of courses has been arranged to accommodate both the full-time and the part-time student. Undergraduate courses are offered once a year during the day for full-time students, and once every two years in the evening for part-time students.

The curriculum prepares the student either for entering graduate school immediately upon graduation, or for a career in electrical engineering and possible graduate studies later. Graduates usually go on to research, design, development, sales, technical management, production, or graduate studies, as well as to teaching.



Louis de Pian, Chairman of the Department of Electrical Engineering

First Five Semesters

See Basic Curriculum (pages 21-22)

Sixth Semester

- CE 140: Materials Science (3)
- EE 12: Linear Networks II (3)
- EE 20: Introductory Engineering Electronics (3)
- EE 32: Fields and Waves II (3)
- EE 62: Introductory Electrical Engineering Laboratory (3)
- EE 152: Introduction to Digital Computers (3)

Seventh Semester

- EE 113: Network Analysis and Design (3)
- EE 121: Engineering Electronics and Design (3)
- EE 133: Electromagnetic Waves (3)
- EE 163: Electrical Engineering Laboratory I (3)
- EE 177: Electrical Energy Conversion (3)
- Elective: Selected from humanities or social sciences (3)

Eighth Semester

- EE 114: Linear Active Networks (3)
- EE 122: Pulse and Waveshaping Electronic Design (3)
- EE 142: Information Transmission, Modulation, and Noise (3)
- EE 160: Electrical Measurements (3)
- EE 164: Electrical Engineering Laboratory II (3)
- EE 172: Control Systems (3)

Computer Science*First Five Semesters*

See Basic Curriculum (pages 21-22)

Sixth Semester

- CE 140: Materials Science (3)
- EE 12: Linear Networks II (3)
- EE 20: Introductory Engineering Electronics (3)
- EE 32: Fields and Waves II (3)
- EE 62: Introductory Electrical Engineering Laboratory (3)
- EE 152: Introduction to Digital Computers (3)

Seventh Semester

- EE 113: Network Analysis and Design (3)
- EE 121: Engineering Electronics and Design (3)
- EE 153: Design of Switching Systems (3)
- EE 157: Machine and Assembly Language Programming (3)
- EE 163: Electrical Engineering Laboratory I (3)
- Elective: Selected from humanities or social sciences (3)

Eighth Semester

- EE 122: Pulse and Waveshaping Electronic Design (3)
- EE 142: Information Transmission, Modulation, and Noise (3)
- EE 154: Digital Computer Design (3)
- EE 158: Algorithmic Methods and High-level Languages (3)
- EE 164: Electrical Engineering Laboratory II (3)
- EE 172: Control Systems (3)

MEASUREMENT SCIENCE

Measurement science concerns the design, construction, and use of instruments in measurement, and the design of experiments. The curriculum prepares for such activities as testing of rockets, missiles, and space vehicles; measurements of the characteristics and properties of materials; determination of standards of measurement in light, heat, optics, electricity, etc.; measurement in various fields of science and in medicine; design and construction of measuring instruments; design and execution of experiments and tests of various kinds; and control of quality of manufactured products.

The graduate will find many opportunities in space research, industry, manufacturing, and research. Opportunities are especially good in the design and application of instruments.

First Five Semesters

See Basic Curriculum (pages 21-22)

Sixth Semester

- CE 140: Materials Science (3)
- E Ad 115: Engineering Analysis (3)
- EE 12: Linear Networks II (3)
- EE 20: Introductory Engineering Electronics (3)
- EE 62: Introductory Electrical Engineering Laboratory (3)
- ME 126: Fluid Mechanics (3)

Seventh Semester

- EE 121: Engineering Electronics and Design (3)
- MeaS 101: Measurement Science I (3)
- MeaS 111: Introductory Instrumentation (3)
- MeaS 121: Mechanical Measurement (3)
- MeaS 122: Heat Measurement (3)
- MeaS 131: Measurement Laboratory (3)

Eighth Semester

- EE 122: Pulse and Waveshaping Electronic Design (3)
- EE 160: Electrical Measurements (3)
- MeaS 102: Measurement Science II (3)
- MeaS 112: Instrumentation (3)
- MeaS 123: Pressure Measurement (3)
- MeaS 132: Measurement Projects Laboratory (3)

MECHANICAL ENGINEERING

Mechanical engineering has become increasingly comprehensive in the range of its activities. The mechanical engineering curriculum provides a background for careers in research, design, development, and manufacturing in a wide variety of industries. The mechanical engineer is concerned with the behavior and processing of materials; the analysis and design of energy systems; the physical behavior and use of fluids; and the construction of mechanical systems—mechanisms, machines, control systems, power devices.

Course offerings in the field of mechanical engineering (beyond those in the Basic Curriculum) are divided into three major groups: mechanics and materials, thermal and fluid sciences, mechanical systems and design. The program of study outlined below is based on the concept that the mechanical engineer must be prepared to meet the challenge of ever-increasing technical and economic problems.

The four-year undergraduate curriculum has been designated to provide a fairly comprehensive basic mechanical engineering education. The preparation is adequate for beginning the practice of mechanical engineering upon graduation, and provides the essential knowledge for registration as required by law for practice as a professional mechanical engineer.

The program also serves as preparation for graduate study in any specialized fields of mechanical engineering.



G.M. Arkilic, Chairman of the Department of Engineering Mechanics

First Five Semesters

See Basic Curriculum (pages 21-22)

Sixth Semester

- CE 140: Materials Science (3)
- EE 20: Introductory Engineering Electronics (3)
- ME 126: Fluid Mechanics (3)
- ME 134: Dynamics of Linear Systems (3)
- ME 148: Thermodynamic Analysis (3)
- Elective: Selected from humanities or social sciences (3)

Seventh Semester

- CE 165: Materials Engineering (3)
- ME 155: Compressible Fluid Flow (3)
- ME 161: Advanced Dynamics (3)
- ME 171: Mechanics of Deformable Solids I (3)
- ME 187: Heat Transfer Theory (3)
- ME 191: Mechanical Design I (3)

Eighth Semester

- E Ad 140: Engineering Economics (3)
- EE 172: Control Systems (3)
- ME 152: Mechanical Engineering Laboratory (3)
- ME 192: Mechanical Design II (3)
- ME 194: Energy Conversion (3)
- Elective: Technical (3)

Graduate Study

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE offers graduate study leading to the degrees of Master of Science, Master of Engineering Administration, and Doctor of Science.

In its graduate programs, the School, as it does in undergraduate study, adheres to the educational philosophy of increasing the knowledge and understanding of the individual student by concentration on principles and their application rather than by encyclopedic coverage of techniques and specialized detail. Each program is individually planned according to the student's preparation and needs.

Graduate study may be undertaken in any field of engineering or applied science in which the School has adequate facilities and resources. Upon approval, the student may select courses in other departments of instruction in the University in order to serve specific needs or objectives.

THE MASTER'S PROGRAMS

The student's program may provide for broad coverage in a variety of fields or may be designed to provide a concentration in particular areas. The mini-

imum program consists of 24 semester hours of approved graduate courses in the major field and area of concentration, a Master's thesis (equivalent to 6 semester hours), and a Master's Comprehensive Examination. Students whose undergraduate study does not include necessary prerequisites may be required to take more than 30 semester hours.

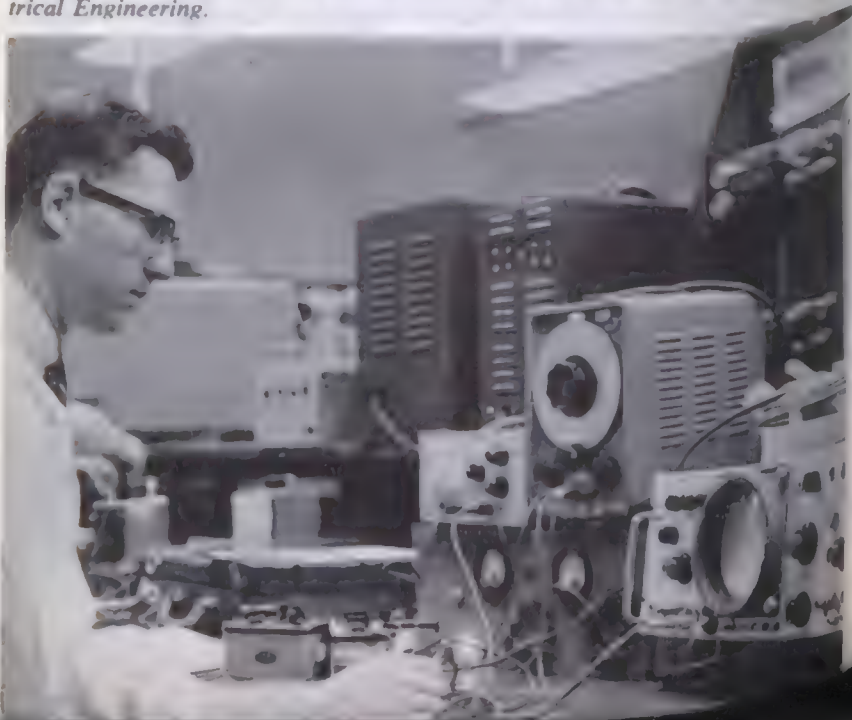
Upon admission the student is assigned an adviser. Programs of study are determined by any prerequisites established and the requirements of the department in which the student wishes to study. The program of studies in preparation for the Master's Comprehensive Examination must be approved by the student's adviser and the appropriate department chairman.

ADMISSION

Admission to graduate study toward a Master's degree requires an appropriate Bachelor's degree from a recognized institution and evidence of capacity for productive work in the field selected, as indicated by undergraduate grades, Graduate Record Examination scores, and similar data.

An applicant who has significant deficiencies in preparation may be required to take prescribed undergraduate courses as an unclassified student before being admitted to graduate student status. In some cases, if such deficiencies are minimal, he may be admitted to graduate student status and allowed to take a limited number of graduate courses while completing the undergraduate courses in which he is deficient. In no case may the undergraduate courses thus taken fulfill any part of the requirements for the Master's degree.

For additional admissions requirements for the degree of Master of Engineering Administration, see page 35; for the degree of Master of Science in the field of Operations Research, see pages 33-34. Candidates for the degree of Master of Science in the field of Electrical Engineering must have satisfied specific undergraduate requirements, depending upon the area of concentration. Students should consult the special brochure *The Graduate Program in Electrical Engineering*.



ADMISSION PROCEDURE

Forms for application for admission are available at the School of Engineering and Applied Science. They must be submitted, together with the application fee of \$25, to the Admissions Secretary, Room 100, Tompkins Hall of Engineering, George Washington University, Washington, D.C. 20006, no later than September 1 for the fall semester, December 15 for the spring semester, May 1 for the first summer session, and June 1 for the second summer session. The applicant must request each educational institution attended since high school graduation to send an official transcript of his record directly to the Admissions Secretary. If the applicant has completed the Graduate Record Examination, he should request that his scores be sent to the School. The applicant will be notified by mail when a decision on his admission has been made.

All inquiries and correspondence relative to admission should be directed to the Admissions Secretary.

TRANSFER CREDIT

Up to 6 semester hours of satisfactory credit (with grades of *A* or *B*), which normally must have been earned in a graduate program at another recognized institution, may be accepted in transfer, when applicable, to satisfy Master's degree requirements in this School. However, the student must, with the approval of his adviser, petition to the appropriate department chairman for such a transfer.

REGISTRATION

A graduate student may register for classes when he presents an official letter of admission or his student identification card from the previous semester. No registration is accepted for less than a semester or one summer session.

Concurrent registration in this School and in another institution not a member of the Consortium of Universities of the Washington Metropolitan Area, Inc., or another division of this University requires the written permission of the Deans concerned, prior to registration. Allowance of credit for work done concurrently at another institution is at the discretion of the Dean.

Dates and hours of registration are stated in the Calendar, page 5, and in the *Schedule of Classes* published in advance of each semester.

MASTER'S THESIS

The degree candidate must submit an acceptable thesis to demonstrate his ability to make independent use of the knowledge and discipline of thought acquired and developed by graduate study, to furnish objective evidence of constructive power in a given field, and to demonstrate that he can communicate the results of his work in writing. Work of a suitable character for which the student has professional responsibility may be considered, whether done on or off campus, provided no significant amount of work is completed without faculty supervision.

As a part of registration for the thesis course 299, the candidate must submit to the appropriate department chairman (on the form obtainable at the School office) his thesis area, approved by his faculty adviser. He must submit his

thesis title to the Dean, on the form available in the School office, at the beginning of the semester in which he expects to graduate. Registration in thesis 299-300 entitles the student, during such registration, to the advice of the member of the faculty under whom the thesis is to be written. He may consult his adviser, but the thesis is the exclusive responsibility of the student.

The thesis in final form must be submitted to the appropriate department chairman by the date stated in the calendar for the semester in which the candidate enrolls in thesis 300. In case a thesis is unfinished on the date specified, the student will be granted an additional semester and must pay the "Continuous Registration" fee (see page 47). If the preparation of the thesis extends beyond the three semesters, approval for an extension of time will be required and the student must reregister for thesis 300 and pay tuition as for a repeated course. The over-all time limit for earning the degree (see page 31) may not be exceeded.

A thesis may be submitted in final form one time. The acceptability of the thesis is determined exclusively by the Master's Comprehensive Examination committee. If the thesis is unacceptable, the student's candidacy and graduate study are terminated.

Printed copies of detailed regulations regarding the form and reproduction of the thesis are available in the Office of the School. Accepted theses, with accompanying drawings, become the property of the University and are deposited in the University Library and the School's Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the Dean.

MASTER'S COMPREHENSIVE EXAMINATION

After completing his prescribed program and submitting his thesis, the candidate must pass a Master's Comprehensive Examination, to demonstrate substantial understanding of principles and method and their use in the area of his interest. This Examination may be written, oral, or both. A candidate who fails any portion of the Master's Comprehensive Examination on his first attempt may be re-examined one more time if approval is given by the appropriate Examining Committee. In the event of failure to complete the Examination satisfactorily, the student's candidacy and graduate study terminate.

REGULATIONS

Regulations regarding REGISTRATION, FEES AND FINANCES are stated on pages 44-49; other University regulations, on pages 55-58.

ATTENDANCE

The student is expected to attend every meeting of the course in which he is registered, fully prepared to carry on the work required. A student may be dropped from any course for undue absence. Excused absences must be arranged with the instructor.

SCHOLARSHIP

Grades are indicated as *A*, excellent; *B*, good; *C*, minimum pass; *F*, fail; and *CR*, credit for satisfactory thesis completion. Whenever a grade is not assigned,

the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) is recorded.

An incomplete may be given at the instructor's discretion. The instructor must state in writing the conditions to be satisfied and the time allowed for making up the incomplete. An incomplete which is not removed within one calendar year is automatically changed to an *F*.

A student may not repeat for credit a course in which he has received a grade of *C* or above, unless required to do so by the department concerned. A written statement to this effect must be submitted to the Registrar by the appropriate department chairman.

For Master's work, a minimum of 24 semester hours of graduate course work with the grade of *B* or higher is required for graduation. Students who receive two grades of *F*, or (except those registered prior to and in continuous residence since the 1967 fall semester) three grades below *B*, are barred from further enrollment in graduate courses and, ordinarily, will not be readmitted to graduate study. Students who receive the grade of *C* in one or two courses are required to take additional course work to make up the minimum 24 semester hours of work with grades of *B* (except those registered prior to and in continuous residence since the 1967 fall semester).

RESIDENCE

In general, a minimum of one year of full-time study, or the equivalent in part-time study, must be completed in the School.

TIME TO COMPLETE MASTER'S DEGREE REQUIREMENTS

A full-time Master's candidate is allowed a maximum of three calendar years to complete all degree requirements, from the date of his first graduate-student status registration in prerequisite or graduate courses. A part-time Master's candidate is allowed a maximum of five calendar years. The time limit does not include any period of registration as an unclassified student before admission to graduate student status, nor does it encompass any specified period of leave of absence. Readmission is required upon expiration of leave of absence under the conditions and requirements then prevailing.

Students who do not complete degree requirements within the allowed time have their graduate status terminated. They may be readmitted to graduate status under conditions specified by the department chairman and approved by the Dean.

THE DEGREE OF MASTER OF SCIENCE

Electrical Engineering

Electrical engineering, at the graduate level, provides one of the most stimulating experiences in advanced studies. The student has reached a degree of maturity and basic knowledge that allows him to enter into new avenues of exciting work. Courses prepare the student in areas of concentration such as networks, electronics, fields and waves, communications, computer sciences, controls and systems, and medical engineering. Depending upon the interest of the student, some of the programs leading to the degree of Master of Science

are given at the NASA-Langley Research Center, Langley Station, Hampton Virginia. NASA-Langley's extensive scientific and engineering facilities and equipment are utilized whenever feasible.

The graduate programs are formulated to take into consideration the student's individual strengths, potentials, skills, aspirations, and abilities. They are determined, through consultation, by the student and his faculty adviser. Their purpose is to provide the student with a thorough understanding of his area of concentration and at the same time to provide him with the breadth of knowledge necessary in modern engineering.

The graduate programs are, in addition, designed to provide a needed educational service to the Washington technical community. Many of the courses have been developed after consultation with private industry and government agencies of the area. They are offered during both the afternoon and evening with a principle of rotation from year to year.

The Department of Electrical Engineering has continuously kept the graduate program up to date, through constant contact with recent developments, through its own research, and through the addition of several experts in appropriate fields serving as part-time and adjunct faculty. The Department provides a well-balanced, modern graduate program.

In order to provide the student with detailed information about its graduate programs, from the point of view of procedures, requirements, regulations, and scope, the Department of Electrical Engineering publishes annually a detailed brochure to supplement the present catalogue. In addition, the Department publishes special pamphlets describing specific programs.

Engineering Mechanics

Dynamic developments in science and technology during the past two decades and, most likely, in decades to come, will require that the engineer keep pace with newly emerging technological disciplines, as well as with new techniques in analysis, design, and computation. Under these circumstances, it is evident that graduate education in advanced technology will assume a vital, if not an absolutely indispensable, responsibility in answering the needs of a technologically oriented society and world. Amidst this proliferation of knowledge and technological specialty, the School adheres to the principle that versatility and depth in scientific fundamentals should be the characteristic features of any graduate program of study that attempts to prepare the graduate student to cope with the engineering developments of today and of the future.

The graduate program in the Department of Engineering Mechanics is quite diverse, encompassing the broad areas of solid mechanics, structural engineering, soil mechanics and foundation engineering, and the thermal and material sciences, as well as fluid mechanics and aerospace engineering. Within these broad categories are programs of study and research in the elasticity, inelasticity, and fracture of solids; the mechanics of continua; the theory of dislocations; the structure and properties of materials; the theory of plates, shells, and elastic stability; vibrations; advanced structural analysis and design, including structural reliability; nonlinear structural behavior and dynamic loading of structures; soil mechanics; classical and statistical thermodynamics; heat and mass transfer; energy conversion; combustion processes; incompressible, compressible, laminar viscous, and hypersonic flows; gas dynamics and reaction kinetics; analytical and nonlinear mechanics; advanced dynamics; space flight

and celestial mechanics; dynamic stability of flight structures; propulsion systems; and aerothermochemistry. Depending upon the interest of the student, some of the programs leading to the degree of Master of Science are given at the NASA-Langley Research Center, Langley Station, Hampton, Virginia. NASA-Langley's extensive scientific and engineering facilities and equipment are utilized whenever feasible.

Programs of study are flexible and can be interdisciplinary in nature with provision for collateral study in related areas offered by other departments of the School and the University. Each program is arranged to fit the individual needs and interests of the graduate student, and at the same time to utilize effectively his previous experience and background. This background should normally include an undergraduate degree in engineering, the physical sciences, or applied mathematics. Each graduate student is assigned a faculty adviser on the basis of his study interests, thereby enabling a close student-faculty relationship to develop during the course of his program.

Operations Research

The program in Operations Research leading to the degree of Master of Science is administered by the Department of Engineering Administration.

The objective of the program in Operations Research is to prepare students whose undergraduate background training was in engineering, mathematics, or physical sciences for study in depth of analytically-oriented techniques of management decision-making and applications.

Expanded scientific, statistical, and mathematical knowledge, combined with growing needs in technical as well as social areas, have created increased demands for individuals trained in the discipline of operations analysis.

The discipline of operations research uses scientific principles supported by statistical and mathematical methodology to study the function and structure of complex technical industrial, military, and social systems in an effort to evaluate the probable effects of proposed courses of action, to establish criteria to judge the effectiveness of these courses, and to assist managers in making decisions to maximize financial return or minimize costs. The program in operations research provides a scientific basis for solving problems involving the interaction of many factors, organizational components in the interests of the whole or total problem. This breadth of interest is an example of the "systems approach" in the sense that a system is an interconnected complex of functionally related components. Most operations research problems begin with aspects of the general problem, with parts of restricted scope. This does not mean that operations research is not concerned with the system as a whole. Just as the industrial, mechanical, electrical, or chemical engineer may start with the study of subsystems or components of a general problem, so does the operations researcher.

ADMISSION TO OPERATIONS RESEARCH PROGRAM

In addition to the requirements for admission to graduate study (see pages 28-29), the applicant must have an adequate knowledge of statistics. This requirement can be met by satisfactory completion of the following undergraduate courses or approved equivalents: Engineering Administration 115, *Engineering*

Analysis; and Statistics 189-90, Mathematical Probability and Applications. A student is required to earn the grade of *C* or better (unless the requirement is stipulated to be a grade of *B* or better upon his admission) in each undergraduate prerequisite course. If this scholarship requirement is not met, the student is barred from further enrollment. A student is not permitted to repeat any of the undergraduate prerequisite courses. Credit for prerequisite courses is not applicable toward the degree of Master of Science in the field of Operations Research.

REQUIRED COURSES

Required courses for the degree of Master of Science in the field of Operations Research are Engineering Administration 269-70, 272, 273, and 299-300. Students must complete Engineering Administration 269, 270, and 273 before attempting any other courses; however, in certain cases, permission may be granted for concurrent registration. Students normally register for and complete Engineering Administration 272 in the last semester of the program.

THE DEGREE OF MASTER OF ENGINEERING ADMINISTRATION

The principal objective of the program leading to the degree of Master of Engineering Administration is to prepare students whose undergraduate background training was in engineering, mathematics, or physical sciences for positions of major managerial responsibility in American industry, government, or the armed services.



H.E. Smith, Chairman of the Department of Engineering Administration

The program is designed to help the student develop a broad understanding of the administrative process. Although years of experience are required to develop the skills, insight, and maturity of judgment which distinguish an effective manager in technical and scientific enterprises, a graduate professional management curriculum can provide the student with an effective start as a manager. The curriculum provides an opportunity for the student to gain an understanding and to develop some useful managerial skills in the functional areas of engineering administration. One of the major purposes is to assist the student in forming the habit of examining problems from an over-all administrative point of view. The individual's own particular experience, and the explicit process of relating this experience to the theoretical structure which he starts to build in graduate study, provides each student with a personal frame of reference through which he may interpret management in a rapidly changing world.

Successful education for engineering administration implies a clear statement of what it is that an engineering manager must do, an analysis of the broad functions involved in management, and a final detailing of modern quantitative methods useful in making and executing decisions. It is the aim of the School, therefore, to keep alive a spirit of general inquiry and a problem-solving orientation.

The management of technical enterprise is probably the most difficult challenge of our times. The professional engineering manager today must understand not only the rapidly changing technologies but also the rapidly changing market place where these technologies are applied for society's benefit. The engineering administrator is the link between these rapidly changing technologies and the needs of society in general.

In summary, the program of study has for its objective the education of managers possessing a combination of technical know-how and administrative skill.

ADMISSION TO ENGINEERING ADMINISTRATION

In addition to the requirements for admission to graduate study (see pages 28-29), the applicant must have an adequate knowledge of the principles of human relations, the fundamentals of accounting, and the fundamentals of statistics. This requirement can be met by satisfactory completion of the following undergraduate courses or approved equivalents: Accounting 115, *Survey of Accounting*; Engineering Administration 115, *Engineering Analysis*; and Psychology 145, *Psychology of Management*. A student is required to earn the grade of C or better (unless the requirement is stipulated to be a grade of B or better upon his admission) in each undergraduate prerequisite course. If this scholarship requirement is not met the student is barred from further enrollment. A student is not permitted to repeat any of the undergraduate prerequisite courses. Credit for prerequisite courses is not applicable toward the degree of Master of Engineering Administration.

REQUIRED COURSES

Analysis, case study, and quantitative approaches are emphasized in addition to technical theories of administration. A program of study consisting of an integrated sequence of courses is prescribed for each student in conference

with an adviser. Students are required to complete Engineering Administration 211-12, 269-70, and 299-300; the remainder of the program is elective. Engineering Administration 211-12 and 269-70 must be taken prior to the elective courses, except that in certain cases permission may be obtained for concurrent registration. Students who wish to take courses in operations research beyond Engineering Administration 269-70 should take Engineering Administration 273 prior to or concurrently with other operations research courses.

THE DOCTORAL PROGRAM

The School of Engineering and Applied Science offers a program of advanced study and research leading to the degree of Doctor of Science. This program is limited to recognized fields in engineering or applied science in which a scientific discipline exists and for which the University has adequate resources.

The Doctoral discipline is designed to prepare the student for a career of creative scholarship by providing a broad background of knowledge and an understanding of research methods. It requires study of interrelated fields of learning as well as original research in the field of central interest.

The discipline for the degree is divided into two stages. The first—made up of a study of interrelated fields of learning which support the general area of research concentration—culminates in the qualifying examination. The second—composed of research investigation of a particular subject in a special field and the presentation of such research findings in a written dissertation—culminates in the final examination.

ADMISSION TO DOCTORAL STUDY

The applicant must have adequate preparation for advanced study, including a satisfactory Master's degree, or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. He must have capabilities and interests beyond the mere assimilation of organized materials in formal courses of instruction. Originality of mind combined with balanced judgment and accuracy in observation or experiment are necessary to the successful applicant.

APPLICATION FOR ADMISSION

Well in advance of the opening of the semester for which the student seeks admission, he should correspond with and preferably have a personal interview with the Dean or department chairman of his proposed field of study, to discuss the University's facilities for guidance in this field, the applicant's qualifications, and the possibilities of an effective doctoral program. If an application for admission is indicated, the student will be advised concerning the details of application procedure.

LANGUAGE REQUIREMENTS

A reading knowledge is required of two foreign languages important in the student's field of interest. One language examination must be passed at the

time of beginning doctoral study. The second must be passed before admission to the qualifying examination and within one year of the start of study for the qualifying examination.

STUDY FOR QUALIFYING EXAMINATION

Upon admission to study for the qualifying examination the student is assigned a faculty adviser, who directs his studies. The adviser assigns fields of learning to insure the student's breadth of knowledge and support research in his central field, advises him concerning the scope and content of these fields of study, and guides him in preparation for his examination. A minimum of 30 semester hours of formal study beyond the Master's work is required prior to the qualifying examination. This requirement does not include any deficiencies to be made up or language courses taken to meet the language requirement.

The purpose of the qualifying examination is to ascertain that the student's breadth of background and intellectual development are adequate to support doctoral research and investigation in his central field. The qualifying examination is both written and oral and usually extends over a period of six days. It is given by a special committee consisting of members of the Faculty and other specialists. Upon favorable report of the examiners to the Dean through the appropriate department chairman, the student is admitted to candidacy for the degree, to pursue his specialized study and research under the supervision of a designated member of the Faculty.

The examination is the sole test of the student's ability to qualify for admission as a candidate for the degree, and to enter the second stage of his doctoral discipline.

RESEARCH, DISSERTATION, FINAL EXAMINATION

The student admitted to candidacy for the degree requests as Director of Research the member of the Faculty under whom he wishes to conduct his research. The Faculty member may accept or reject such request. The research area is approved by the Director and the appropriate department chairman or the Dean. Throughout the remainder of the doctoral program, the candidate is responsible solely to his Director, in his research and in the presentation of his dissertation. Work on the dissertation is equivalent to a minimum of 24 semester hours.

THE DISSERTATION

A dissertation is required as evidence of ability to perform scholarly research and to interpret and present its results.

The candidate must submit to the appropriate department four complete copies of the dissertation and two original copies of an abstract (not to exceed 600 words) of his dissertation no later than the date specified in the calendar. One copy of the abstract is for inclusion in the announcement of the examination and one for reproduction by University Microfilms, Inc. One copy of the dissertation is also sent to University Microfilms, Inc.

Printed copies of detailed regulations regarding the form and reproduction of the dissertation, preparation of the abstract, and services offered by University Microfilms, Inc., are available at the School Office. The successful

candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the abstract of his dissertation, and for the basic service rendered by University Microfilms, Inc. Accepted dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library and the School's Library, where copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the Dean.

THE FINAL EXAMINATION

Upon approval of the dissertation by the Director, the candidate is presented for his final examination.

The final examination is oral and is open to the public. The candidate must demonstrate a mastery of his special field of interest and of the materials and techniques used in the research. The committee of examiners includes members of the Faculty competent in the research field or in closely related subjects and may also include qualified experts brought to the University especially to participate in the examination. When the candidate satisfies the examining committee concerning the high quality and originality of his contribution to knowledge as well as his mastery of the scholarship and research techniques of his field, the committee of examiners recommends him for the degree of Doctor of Science.

RESIDENCE AND CONTINUOUS STUDY

All of the work for the degree must be done in residence (on the campus), except when special permission is granted to conduct research in an approved off-campus facility. The student must maintain "continuous registration" in the School, even when granted a leave of absence. Failure to do so breaks the student's registration, and he must apply for readmission to doctoral study under whatever new conditions and regulations are set up by the department chairman and approved by the Dean.

There is no formal regulation concerning the minimum amount of time to be spent in preparation for the qualifying examination or as a candidate engaged in doctoral research. However, the qualifying examination must be completed within five years of the date of admission, and the entire degree program must be completed within seven years. After admission the student may apply for his qualifying examination whenever his adviser believes that he is prepared to take it: his research and specialized study may be undertaken with whatever concentration of time meets the approval of his Director of Research. Normally a minimum of two years of full-time study and research is spent in meeting the requirements for the degree.

The Center for Measurement Science

THE CENTER, UNDER THE DIRECTION of the School of Engineering and Applied Science, is a cooperative activity of the University, industry, and government providing education, research, and service programs related to measurement. It was established by the University in 1960.

The principal, but not exclusive, activities of the Center are:

The education of persons for careers in measurement science;

The development and improvement of measurement, standardization, and calibration techniques, apparatus, and data—with particular reference to high precision;

The provision of staff and facilities to industry for research and consultation on measurement problems in industry, including the maintenance of primary standards of measurement directly traceable to the national standards;

The publication of results of research, manuals of practice and procedures, and information related to measurement science.

The Center maintains relations with industry and government through its Associate Program, in which interested individuals, companies, or other organizations may participate. The mutual communication, collaboration, and support made possible by this program bring vitality to the Center activities and insure attention to the needs of industry and government.

Through these and other activities the Center serves as a source of personnel competent in measurement science, as an instrument for collaborative research on measurement problems, and as a service organization providing expert capability to industrial and government organizations in the solution of their measurement problems.

EDUCATION PROGRAM

The Education Program of the Center consists in part of curricula offered by the School, which prepare the student to assume responsibilities in the field of measurement science. The curricula are integrated, to permit a student to terminate his formal education at any level, or to proceed to the next level. Programs lead to the degrees of Bachelor of Science, Master of Science, and Doctor of Science.

In addition to the degree programs, the education program includes seminars, special conferences, and short courses offered from time to time.

RESEARCH PROGRAM

The Research Program of the Center includes all aspects of research and development related to measurement science. Research and or development may be undertaken as independent studies by staff members for the Center, as studies for a sponsor under contract, or by personnel of Associates of the Center assigned to the Center to undertake the specific work. Associates receive publications of the Center; certain publications may be restricted in distribution.

SERVICE PROGRAM

The Center arranges for consultation and assistance of the Faculty and Staff and the use of the facilities of the Center in connection with specific problems in measurements. The program is restricted to the use of the Associates of the Center.

The Service Program also makes it possible for Associates to engage the various resources of the University, through the Center, as may be desirable and feasible, in solution of their problems of measurement.

Continuing Engineering Education Program

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE has recently undertaken a major expansion in its program of continuing engineering education. The objective of this program is the specific enhancement of the competence of the individual as a practicing engineer, rather than the attainment of an additional academic degree. Studies of the American Society for Engineering Education and other groups have emphasized the increasing importance of such programs as each year brings greater scientific and technological advances.

In the past several years the School has offered a small number of courses in continuing engineering education. The response to these courses has indicated that there is an unfulfilled need in this area of study. In the Northeast, Middle West, and West Coast areas, a number of universities are already offering several hundred such courses. However, in the Middle Atlantic and South Atlantic regions, and particularly in the Washington metropolitan area, no regional university has offered more than token services.

In its expanded program, the School offers an adequate number of courses each year; approximately half of them last five days (30 classroom hours); the remainder meet either for three days (18 classroom hours) or one night a week for eight weeks (16 classroom hours).

In addition to the School's faculty, lecturers and instructors for these courses are drawn from industry and government—the National Bureau of Standards, NASA-Goddard Flight Center, and NASA-Langley Research Center, for example.

The GWU—NASA-Langley Graduate Program

GEORGE WASHINGTON UNIVERSITY, in cooperation with the National Aeronautics and Space Administration's Langley Research Center, has initiated a full-resident graduate engineering program at NASA-Langley, in Hampton, Virginia.





approximately 200 miles south of Washington, D.C. Through special arrangement, the University's on-campus students in various fields of engineering can utilize, when feasible, NASA-Langley's extensive scientific and engineering facilities and equipment. In addition, the faculty at NASA-Langley may be called upon to teach specialized courses at the School of Engineering and Applied Science.

The program at NASA-Langley leads to the degree of Master of Science in the fields of aeronautics, applied mechanics, astronautics, mechanical engineering, and electrical and computer engineering. Areas of study and research include solid mechanics and materials science, electronics, fields and waves, computer sciences and engineering, structural engineering, fluid mechanics, thermal sciences, controls and systems, networks and systems, mathematical methods in engineering, and aerospace engineering.

Institute for the Study of Fatigue and Structural Reliability

THE INSTITUTE FOR THE STUDY OF FATIGUE AND STRUCTURAL RELIABILITY is a major resource center at the School of Engineering and Applied Science. It is under the technical direction of Dr. A.M. Freudenthal, an internationally rec-

ognized authority. In addition to advancing interdisciplinary research, the Institute provides specialized training for graduate students in these fields.

The basic objective of the Institute is to develop an interdisciplinary approach to fatigue research through close cooperation of research workers from different fields. The Institute deals principally with the study of the physical mechanism of damage initiation, in order to establish principles for the rational design of metal alloys of superior fatigue performance on the one hand, and to develop advanced methods of fatigue design and reliability on the other. Because of the large volume, past and current, of straight fatigue testing of standard test specimens in industrial, government, and university laboratories, no testing of this type is generally conducted by the Institute. However, results of such tests appearing in publications and reports are carefully scrutinized for their significance in terms of the purposes of the Institute.

The Institute conducts seminars, issues technical reports, and supplies information, lectures, and consultations to many government and industrial research and development laboratories.



Alfred Freudenthal, Director of the Institute for the Study of Fatigue and Structural Reliability

Administration

Harold Liebowitz, D.Ae.E., *Dean of the School of Engineering and Applied Science*

Galip Mehmet Arkilic, Ph.D., *Chairman of the Department of Engineering Mechanics*

- Louis de Pian, Ph.D., *Chairman of the Department of Electrical Engineering; Acting Director of the Center for Measurement Science*
 Herbert Ernest Smith, Ph.D., *Chairman of the Department of Engineering Administration*
 Alfred Freudenthal, M.S., *Director of the Institute for the Study of Fatigue and Structural Reliability*
 John Edward Duberg, Ph.D., *Director of the NASA-Langley Graduate Program*
 I. Edward Garrick, B.S., *Assistant Director of the NASA-Langley Graduate Program*
 S. Walter Hixon, Jr., B.S., *Administrator of the NASA-Langley Graduate Program*
 Dick Johnston Cole, *Assistant Administrator of the NASA-Langley Graduate Program*
 Jack Emerson Mansfield, B.S. in E.E., *Coordinator of the Continuing Engineering Education Program*
 George Ellowitz, B.A., *Executive Assistant to the Dean*
 Charles Donald Brown, B.S., *Admissions Officer*

DEAN'S COUNCIL

- Harold Liebowitz (*Chairman*), G.M. Arkilic, E.H. Braun, R.E. Cronin

Advisory Council*

THE PURPOSES of the Advisory Council for the School of Engineering and Applied Science are to strengthen communication between the School and the other colleges, schools, and divisions of the University as well as between the School and the University's Board of Trustees; to advise on the programs of instruction, research, and service in the School and to help interpret these programs to the community and the Nation; and to stimulate support for the continued development of the School and its programs.

MEMBERS OF THE COUNCIL

- Chairman: Stephen R. Woodzell (*University Trustee*), *President, Potomac Electric Power Company*
 Nelson T. Grisamore, *Professor of Engineering and Applied Science*
 Donald Gross, *Associate Professor of Engineering and Applied Science*
 William J. Harris, *Assistant Director—Technology, Battelle Memorial Institute*
 Herman H. Hobbs, *Professor of Physics*
 George D. Lobingier, *Director, Graduate Education, Westinghouse Corporation*
 Louis Polk, *President, Louis Polk, Inc.*
 Arthur W. Sloan, *Chairman of the Board, Atlantic Research Company*
 E.A. Wareham, Jr., *Associate, Frank Sullivan Associates*
 Harold A. Wheeler, *President, Wheeler Laboratories, Inc.*

*The President of the University, the Vice President for Academic Affairs, and the Dean of the School of Engineering and Applied Science are ex officio members of the Advisory Council.

GENERAL INFORMATION

Registration

THE DATES, HOURS, AND PLACE OF REGISTRATION will be stated in the *Schedule of Classes*, which is available well in advance of each semester.

A student cannot register for classes until he has received a letter of admission to the University issued by the appropriate admitting office.

No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in this University and another institution without the prior permission of the dean of the college, school, or division in which he is registered in this University. Registration in more than one college, school, or division of the University requires the written permission of the deans concerned, *prior to registration*. Allowance of credit for work done concurrently at another institution is at the discretion of the appropriate committee.

ELIGIBILITY FOR REGISTRATION

Registration for the following categories of campus students is held on the days of registration stated in the University Calendar. No student who is suspended or whose record is not clear for any reason is eligible to register.

New Student.—Upon receipt of a letter of admission, the new student is eligible for registration on the stated days of registration.

Readmitted Student.—A student previously registered in the University who was not registered for campus courses during the preceding semester or summer session must apply for and receive a letter of readmission from the appropriate admitting office before he is eligible for registration. A student registered for the spring semester of 1969 need not apply for readmission for the fall semester 1969-70. Such a student is a "Continuing Student."

Continuing Student.—The student registered for campus courses in the immediately preceding semester of the academic year is eligible to register upon presentation of his student identification card from the previous semester. The

student registered for the 1969 Summer Sessions campus courses, and not restricted to summer registration, is eligible to register for the 1969-70 fall semester on presentation of his 1969 Summer Sessions student identification card.

REGISTRATION CHANGES AND WITHDRAWALS (see pages 46, 48-49, 55-56)

Fees and Financial Regulations

FEES PAID BY STUDENTS cover only a portion of the cost of the operation of the University. Income from endowment funds, grants, and gifts from alumni and friends of the institution make up the difference.

The following fees and financial regulations were adopted for the academic year 1969-70. (See page 47 for projected tuition increases for 1970-73.)

Tuition Fees

For undergraduate study:

| | |
|--|----------|
| Full-time program (12 or more hours a semester)..... | \$925.00 |
| Part-time program, for each semester hour..... | 64.00 |

For graduate study* (except for those students registered before July 1, 1967, who wish to continue payments in accordance with the plan (see below) in effect prior to that date):

| | |
|---|-------|
| For each semester hour for which the student registers..... | 64.00 |
|---|-------|

Doctoral students not enrolled under the payment plan in effect before July 1, 1967, are required to register for minimum hour-loads,† as follows:

1. Full-time doctoral students must register for a minimum of 12 semester hours a semester until 24 hours of work have been completed beyond the qualifying examination; and a minimum of 4 semester hours a semester thereafter until the satisfactory completion of the final examination.
2. Part-time doctoral students must register for a minimum of 6 semester hours a semester until 24 hours of work have been completed beyond the qualifying examination; and for a minimum of 4 semester hours a semester thereafter until the satisfactory completion of the final examination.

For candidates for Master's degrees registered prior to July 1, 1967, who wish to continue payments according to the plan in effect prior to that date:

| | |
|---|----------|
| Total fee, including the Master's Comprehensive Examination†..... | 1,850.00 |
|---|----------|

*Registration in thesis courses (299-300) entitles the student, during such registration, to the advice of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished at the end of a semester, an extension of one semester will be granted, requiring payment of a "Continuous Registration" fee (see page 47). If the preparation of the thesis extends beyond the three-semester period, approval for extension will be required and the student must repeat the thesis course 300 and pay tuition for a repeated course, provided the over-all time limit for earning the degree is not exceeded.

†The minimum hour-load is required during the summer sessions. Students completing payment of the total fee before completion of the required work (including thesis and comprehensive examinations) will be granted registration on a "continuous registration—no charge" basis for one semester immediately following the semester in which tuition payment is completed.

Students requiring additional time for completion of required work after completion of payment of the total fee and the expiration of a semester "continuous registration—no charge" must register for the next semester and pay the normal "continuous registration" fee. See page 57 for regulation governing Military Leave.

For students registered for the degree of Doctor of Science prior to July 1, 1967, who wish to continue payments according to the plan in effect prior to that date:

| | |
|---|------------|
| For work leading to and including the qualifying examination* | \$1,800.00 |
| For work leading to and including the final examination* | 1,800.00 |

Additional Course Fees

In certain courses additional fees, such as laboratory and material fees, are charged. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in two payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

Graduation Fees

| | |
|---|---------|
| Bachelor's, Master's, Doctor's degrees..... | \$25.00 |
| Fee for binding Master's Thesis..... | 10.00 |

| | |
|---|-------|
| Fee for Microfilm Service and Printing Abstract of Doctoral Dissertation..... | 55.00 |
|---|-------|

Residence Hall Fees (see page 64)

Special Fees

| | |
|--|------------|
| Application fee (degree candidates), nonrefundable..... | 25.00 |
| Tuition deposit, nonrefundable: | |
| Charged each entering or readmitted full-time undergraduate student, except early decision freshmen..... | 100.00 |
| Charged each freshman admitted by early decision plan..... | 200.00 |
| Application for room reservation, nonrefundable: | |
| Charged each resident student, except early decision freshmen..... | 100.00 |
| Charged each resident student admitted by early decision plan..... | 200.00 |
| Admission tests (when required)..... | 6.00-12.00 |
| Late-registration fee, for failure to register within the designated period..... | 15.00 |
| Withdrawal fee, charged in special cases..... | 5.00 |
| Service fee, for deferred payment plan (see "Payment of Fees" below)..... | 5.00 |

* If the tuition for the first stage is paid in full at the beginning of the first stage of the doctoral discipline, the candidate is entitled to five successive semesters on a "continuous registration—no charge" basis. If still more time is needed, the student must maintain continuous registration and pay the continuous registration fee.

If the tuition is paid in four installments at the rate of \$450.00 a semester at the beginning of the first stage of the doctoral discipline, no continuous registration fee will be charged if a third year is needed for completion of the first stage of the degree requirements. If still more time is needed, the student must maintain continuous registration and pay the continuous registration fee. If the tuition is paid in six installments at the rate of \$300.00 a semester and if still more time is needed, the student must maintain continuous registration and pay the continuous registration fee.

If the tuition for the second stage is paid in full at the beginning of the second stage of the doctoral discipline the candidate is entitled to three successive semesters on a "continuous registration—no charge" basis. If still more time is needed, the student must maintain continuous registration and pay the continuous registration fee.

If the tuition is paid in two installments at the rate of \$900.00 a semester at the beginning of the second stage of the doctoral discipline no continuous registration fee will be charged if a second year is needed for completion of this stage of the discipline. If the tuition is paid in four installments at the rate of \$450.00 a semester at the beginning of the second stage and still more time is needed, the student must maintain continuous registration and pay the continuous registration fee.

| | |
|--|-------|
| Reinstatement fee, for reinstatement after financial suspension for non-payment of fees..... | 15.00 |
| Returned check fee, charged a student whose check is returned because of insufficient funds or improper drafting..... | 15.00 |
| Continuous registration fee, to maintain "continuous registration" status during any semester of absence from the University or after completion of tuition requirements*—due and payable on the official days of registration | 64.00 |
| Engineers' Council fee, charged each student in the School of Engineering and Applied Science for each semester or any part thereof except the summer term | 1.50 |
| For each examination to qualify for advanced standing and for each special examination | 5.00 |
| English test for foreign students (when required)..... | 5.00 |
| Laboratory checkout fee, for failure to check out of Chemistry laboratory by the date deadline set by the instructor..... | 3.00 |
| Transcript fee, for each transcript of record..... | 1.00 |

Registration in the University entitles each student to the following University privileges: (1) the services of the Student and Alumni Career Services Office; (2) the use of University library; (3) gymnasium privileges; (4) admission to all athletic contests, unless otherwise specified; (5) subscription to the *University Hatcher*, the student newspaper; (6) admission to University debates; (7) medical attention and hospital services as described under Health Services. These privileges terminate when the student withdraws or is dismissed from the University.

PROJECTED TUITION INCREASES 1970-73

In order that students and their parents may plan more realistically for a total four-year period, tuition increases for the academic years 1970-71, 1971-72, and 1972-73 have been estimated as follows:

| | |
|--|----------|
| Increase by year (full-time undergraduate students): | |
| 1970-71 | \$100.00 |
| 1971-72 | 100.00 |
| 1972-73 | 100.00 |
| Increase by semester hour (graduate and part-time undergraduate students): | |
| 1970-71 | 4.00 |
| 1971-72 | 4.00 |
| 1972-73 | 6.00 |

It is not possible to project future economic data with certainty. Barring a severe change in the national economy, however, the above listed tuition schedule will be followed.

* Payment of the continuous registration fee entitles the student who is granted leave of absence to return and continue his work toward a degree under the academic requirements which were in force at the time of his first registration. The continuous registration fee applies toward neither tuition fee nor residence requirements for the degree. (See also footnotes on pages 45 and 46.)
 See page 57 for regulation governing Military Leave.
 A student who drops a chemistry course before the end of the semester must check out of the laboratory at the next regular laboratory period.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier. No student is permitted to complete registration or attend classes until all fees are paid.

Tuition and fees for each semester are due and payable in full at the time of each registration.

However, a student registered for six semester hours or more may sign a contract with the Student Accounts Office at the time of each registration permitting him to pay one-half of the total tuition and fees (except for fees payable in advance) at the time of registration and the remaining half on or before November 5, 1969 (for the fall semester) and March 18, 1970 (for the spring semester). A service fee of \$5 will be due and payable at the time of registration for the use of this deferred payment plan. The University will not obligate itself to notify the student in advance of the payment-due date for the second half of the semester charges. Students who fail to make any payment when due will be automatically suspended. They may not attend classes until they have paid all accrued fees and the \$15 reinstatement fee and have been officially reinstated by the Student Accounts Office.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Student Accounts Office.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

Because many parents may wish some option in meeting and financing all or part of the cost of a college education, the University offers educational loan plans through the Girard Trust Exchange Bank in Philadelphia, Pennsylvania; Funds for Education, Inc., Manchester, New Hampshire; and The Riggs National Bank, Washington, D.C.

Although similar in purpose, these plans vary somewhat in coverage and conditions. One-year and multiple-year plans are available. Insurance covering the life and health of the sponsor is provided through these plans.

Individuals over twenty-one years of age who are employed full-time are also eligible to apply. They may sponsor their own contracts, provided they meet the conditions specified by the plan for which they are applying.

Brochures and applications describing these plans are available in the Office of Student Financial Aid.

WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean of the School. Notification to an instructor is not an acceptable notice (see "Withdrawal," pages 55-56).

In authorized withdrawals and changes in schedule, cancellations of semester tuition charges and fees will be made in accordance with the following schedule.

1. Complete withdrawal from the University:**Fall Semester**

| | |
|---|-------------|
| Withdrawal dated on or before September 26, 1969..... | 90 per cent |
| Withdrawal dated September 29 to October 10, 1969 | 75 per cent |

| | |
|--|-------------|
| Withdrawal dated October 13 to October 24, 1969..... | 50 per cent |
| Withdrawal dated after October 24, 1969..... | none |

Spring Semester

| | |
|---|-------------|
| Withdrawal dated on or before February 6, 1970..... | 90 per cent |
| Withdrawal dated February 9 to February 20, 1970..... | 75 per cent |
| Withdrawal dated February 23 to March 6, 1970..... | 50 per cent |
| Withdrawal dated after March 6, 1970..... | none |

2. For a change in status from full-time to part-time student or for partial withdrawal by a part-time student, the above schedule applies to the difference in charges between the original program and the adjusted program continuing in effect.
3. A student enrolled in a full-time program who drops or adds a course and continues to be in a full-time program will have no financial adjustments of tuition made other than those involving course fees.
4. A student who is granted military leave before completing a semester is given credit for all tuition paid for that semester, for use upon his return to the University. No tuition will be refunded to a student granted military leave (see "Military Leave," page 57).

In no case will tuition be refunded or reduced because of absence from classes. Payment applies only to the semester for which a registration charge is incurred, and in no case will this be credited to another semester.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Students are encouraged to provide their own cash funds until they can make banking arrangements in the community.

Financial Aid***FOR UNDERGRADUATE STUDY**

THE GEORGE WASHINGTON UNIVERSITY has a program of financial assistance for undergraduate students of scholarships, loans, grants, part-time employment, or any combination of these resources. The University participates in the National Defense Student Loan, Educational Opportunity Grant, and College Work-Study programs. Financial aid is awarded on the basis of the student's scholastic record, financial need, and qualities of leadership and character.

Scholarships are awarded for the academic year.

Applications and supporting credentials for financial aid must be filed by February 1 (entering freshmen), March 1 (enrolled undergraduate or entering transfer students) preceding the academic year of the award for the fall semester; by October 31, for the spring semester; and by May 1, for the summer session.

* For information concerning financial aid for students from foreign countries, see page 54.
 * A Summer Sessions student is eligible for consideration only if he is enrolled in this University for at least 8 semester hours in the immediately preceding spring semester or has applied for financial aid for the following fall semester.

Credentials required of all financial aid applicants:

1. *Application for Financial Aid* forms for entering freshmen and transfer students will automatically be forwarded to the student when the Office of Admissions notifies the Office of Student Financial Aid that an Application for Admission has been received and the student indicates he will apply for financial aid. Students presently enrolled in the University may obtain forms upon request, at the Office of Student Financial Aid.

2. *Parents' Confidential Statement* (Code 5246) must be filed by all applicants who are under twenty-five years of age, married or single, dependent on or independent of parental support. Students who are applying for aid for the academic year (September-June) should file the Parents' Confidential Statement with the College Scholarship Service, Box 176, Princeton, N.J. 08540; Box 1925, Berkeley, Calif. 94701; or Box 881, Evanston, Ill. 60204, no later than ten days prior to the deadline dates for application, see dates above. Students applying for financial aid for the spring semester and/or the summer session only should file the Parents' Confidential Statement directly with the Office of Student Financial Aid, George Washington University.

Entering freshmen may obtain forms at local secondary schools or upon request to the College Scholarship Service. All other applicants may obtain forms, upon request, at the Office of Student Financial Aid.

An undergraduate *transfer* student is not eligible for scholarship funds until he has completed one full semester (13 hours) at this University with a minimum average of B (3.0). A transfer student is, however, immediately eligible for other types of financial aid.

SCHOLARSHIPS

Scholarships are awarded for the academic year unless otherwise specified and are credited in equal parts for each semester. Each holder must carry a full schedule of academic work during the period for which the scholarship is awarded.

Applications should be submitted on or before February 1, for the following academic year and, unless otherwise specified, should be addressed to the Office of Student Financial Aid. Awards are made during the month of April. All scholarships begin with the fall semester.

The following scholarships are limited to students in the School of Engineering and Applied Science. The University offers many others which are open to engineering students. A special bulletin containing a complete list and full information concerning fellowships and scholarships may be obtained from the Office of Student Financial Aid, George Washington University, Washington, D.C. 20006.

Association of Federal Communications Consulting Engineers Scholarship (1958).^{*}—A full-tuition scholarship, including laboratory fees and books. Available to a student of good character, promise, and leadership working toward the degree of Bachelor of Science (Electrical Engineering) and intending to major in communications.

Frederick Albert and Alma Hand Britten Scholarships (1959).—Request of Alma Hand Britten for scholarship assistance to students entering the School of

^{*} This scholarship is renewable and is, therefore, not available each year for award to an incoming freshman.

Engineering and Applied Science who would not otherwise be able to pursue such professional study. Available for undergraduate and graduate study.

Henry Harding Carter Scholarship (1896).—Established by Maria M. Carter in memory of her husband to aid a deserving student who is preparing for the civil engineering profession. Available to students working toward the degree of Bachelor of Science (Civil Engineering).

Henry Parsons Erwin Scholarship (1955).—Established by Helen B. Erwin as a memorial to her husband, a former Trustee of the University. A partial scholarship for a student in Engineering and Applied Science.

Louis E. Giles Memorial Scholarships (1966).—Bequest of Susie E. Giles in honor and memory of her husband for scholarships to undergraduate and graduate students in the School of Engineering and Applied Science requiring financial assistance.

George Washington University Board of Trustees Scholarships.—Full- and partial-tuition undergraduate scholarships which will begin in the fall semester and extend for four successive academic years, provided the holder maintains a B average, as well as a high standard of deportment, and continues to be in financial need. Candidates must plan to select a curriculum leading to a Bachelor's degree.

FOR GRADUATE STUDY

SCHOLARSHIPS, FELLOWSHIPS, ASSISTANTSHIPS, TRAINEESHIPS

The George Washington University program of financial assistance for graduate students includes graduate scholarships, fellowships, assistantships, and loans. Application for admission to graduate study is a prerequisite for consideration. The University participates in the National Defense Student Loan and College Work-Study programs.

Application and correspondence concerning graduate scholarships, fellowships, or assistantships, unless otherwise specified, should be sent directly to the Dean of the School, and addressed to George Washington University, Washington, D.C. 20006. Unless otherwise specified, application and supporting credentials should be submitted not later than March 1 preceding the period for which the award is made.

A separate application for National Defense Student Loans or the College Work-Study Program must be submitted to the Office of Student Financial Aid by April 1 for the following academic year.

Frederick Albert and Alma Hand Britten Scholarships (1959).—See page 50.

Paul H. and Margaret M. deMaine Scholarships (1967).—Full and partial scholarships for graduate students whose research involves the use of computers. Inquiries should be made to the Director of the Computer Center of the University.

Louis E. Giles Memorial Scholarships (1966).—See above.

Phi Delta Gamma Scholarship Endowment Fund (1968).—Established by the Beta Chapter of Phi Delta Gamma, national fraternity for graduate women. For graduate women students.

Graduate Teaching Fellowships.—Available to students in Master's and doctoral programs. Each teaching fellow renders a designated unit of service to his major department of instruction and receives a stipend of up to \$2,800 (on a 9-month basis), plus tuition and course fees.

National Science Foundation Graduate Fellowships.—Fellowships, including tuition, fees, stipends of \$2,400 to \$2,800 (on a 12-month basis), and allowances of \$500 a year for dependent spouse and each dependent child. No awards are made for clinical areas of study, education, business, or social work. Applications should be made to the Fellowship Office, National Academy of Sciences, National Research Council, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.

National Science Foundation Graduate Traineeships.—Available to students in sciences. Traineeships include tuition, stipends of \$2,400 to \$2,800 (on a 12-month basis), and stipulated allowances for dependents. Inquiries and applications should be submitted prior to February 15 to the Graduate School of Arts and Sciences.

Research Assistantships in Data Processing and Related Fields.—Available to graduates, and to undergraduates on the junior and senior levels, in any school of the University. Research Assistants are expected to work 20 hours a week conducting research in support of an established research program, in programming, or in conducting individual research on an approved research project. Stipends vary from \$3,124 to \$6,449, depending on the status of the student and the tenure of the appointment (9–12 months). Further information and applications are available from the Administrator, Logistics Research Project, Staughton Hall, 707 Twenty-second Street, N.W., Washington, D.C. 20037.

Resident Assistantships (men and women) and Positions of Residence Hall Director and Assistant Director (men).—Available to graduate students in any field of study who are interested in working with the student personnel program in University residence halls. Specific duties vary with the position, but basically consist of counseling, advising student groups, and administration. Remuneration varies according to the responsibilities and demands of the position. All positions are part-time, enabling staff members to enroll as full-time students. Application should be completed before March 15. Further information may be obtained from the Office of the Dean of Men or the Office of the Dean of Women.

LOAN FUNDS

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Students should direct inquiries to and file applications with the Office of Student Financial Aid. Applicants for a National Defense Student Loan or a United Student Aid Fund loan must file a *Parents' Confidential Statement* and an *Application for Financial Aid*. Deadline for submitting applications with supporting credentials is February 1 (entering freshmen), March 1 (enrolled undergraduate or entering transfer students), April 1 (graduate students) preceding the academic year of the award; October 31, for the spring semester; and May 1, for the summer session*. Application for admission to the University is a prerequisite for consideration.

National Defense Student Loan Program.—This fund is available to full-time graduate or undergraduate students in good academic standing who are in need

* A Summer Sessions student is eligible for consideration only if he is enrolled in this University for at least 8 semester hours in the immediately preceding spring semester or has applied for financial aid for the following fall semester.

of financial assistance. An undergraduate student may borrow for college expenses a sum not exceeding \$1,000 a year and, during his entire undergraduate program, a sum not to exceed \$5,000. A graduate or professional student may borrow a maximum of \$2,500 a year. The total loans made to such a student for all years, including any loans made to him as an undergraduate, may not exceed \$10,000.

State Guaranteed Loan Program.—These loans, provided for in Title IV Part B of the Higher Education Act of 1965, are administered by each state. A student wishing further information should contact the Department of Higher Education in the state in which he is a legal resident.

Warren Stickler Memorial Loan Fund (1966).—A fund established by the Precision Measurements Association as a memorial to Warren Stickler is available to students in the Measurement Science curricula.

United Student Aid Fund Loan.—This fund is available to full-time graduate and undergraduate students who have completed the freshman year and are in need of financial assistance. Students may borrow up to \$1,500 a year. The total loans made to a student, including any loans made to him as an undergraduate, may not exceed \$7,500. Application must be made and approved through the University by the date deadlines stated above.

John Brewster Willis, Jr., Loan Fund in Mechanical Engineering.—A fund of \$1,515, established by Mrs. William L. Lane as a memorial to her nephew, John Brewster Willis, Jr., is available to Mechanical Engineering students (graduate or undergraduate) who are primarily interested in aeronautics.

A number of short-time emergency loan funds are also available at the University. Information concerning these funds is contained in a special bulletin available from the Office of Student Financial Aid.

EDUCATIONAL OPPORTUNITY GRANTS

Educational Opportunity Grants, as authorized by the Higher Education Act of 1965, are available to a limited number of undergraduate students with great financial need. The applicant must show academic promise, be accepted for enrollment on a full-time basis, or be a currently enrolled student in good standing. Students may receive Educational Opportunity Grants of up to \$800 for each year of their higher education up to 4 years.

COLLEGE WORK-STUDY PROGRAM

The Federal College Work-Study Program provides part-time jobs both on and off campus for full-time students with financial need. Applications and information are available at the Office of Student Financial Aid.

STUDENT EMPLOYMENT

The Student and Alumni Career Services Office maintains a registry of both full-time and part-time positions available in the Washington area for undergraduate and graduate students.

After registration, interested students may apply at the Student and Alumni Career Services Office, 2033 G Street, N.W., for interviews and referrals to positions for which they are qualified.

FOREIGN STUDENTS

Undergraduate foreign students with proven financial need who have completed one semester of full-time work (15 hours) at this University with a *B* average (3.00) or better are eligible for consideration for University Board of Trustees Scholarships. Scholarships are awarded in the spring for the following academic year. See instructions for applying for undergraduate financial aid, pages 49-50.

Limited awards for graduate teaching fellowships are the responsibility of the chairman of the department or dean of the school in which the degree is to be earned. Work as a fellow requires excellent knowledge of English—both spoken and written.

Long-term loan funds for undergraduate and graduate foreign students are limited in amount and are available only to those foreign-born persons who have established resident status in the United States through the Immigration and Naturalization Service.

Students who wish to study in the United States should have available sufficient funds to cover expenses for one full year before attempting to enter a college or university. The cost at this University for one academic year (September-June) is between \$3,500 and \$4,000. This estimate includes room and board, tuition, books, clothes, and incidental expenses; no travel, holiday, or medical expenses are included.

Prizes

Norman B. Ames Memorial Award.—Established by many friends of Professor Ames and awarded annually to a graduating senior of the School of Engineering and Applied Science who is nominated by his fellow students as having made significant contributions to the students in the School of Engineering and Applied Science and to the School and University.

Martin Mahler Prize in Materials Testing.—A one-year membership in the American Society for Testing Materials awarded to the upper division or graduate student in engineering who submits the best reports on tests in the materials laboratories course with preference given to prestressed concrete tests.

School of Engineering and Applied Science Distinguished Scholar.—A certificate awarded annually by the Faculty of the School of Engineering and Applied Science to the senior who graduates with the highest scholastic standing. The student's name is engraved on a plaque displayed in Tompkins Hall of Engineering.

Sigma Tau Prize.—A medal awarded annually by Xi Chapter to the freshman in the School of Engineering and Applied Science who maintains the highest scholastic standing in the work of the entire year.

Theta Tau Activities Plaque.—A plaque awarded annually by Gamma Beta Chapter to the senior in the School of Engineering and Applied Science with the most outstanding record in activities for the entire period of his attendance.

Regulations

A STUDENT ENROLLED in the School of Engineering and Applied Science is required to conform to the following University regulations.

A student who withdraws or is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled. If such falsification is discovered after the student has established an academic record at the University, he may be subject to dismissal from the University. Such a student will be ineligible (except by special action of the Faculty) for subsequent registration in the University.

ACADEMIC DISHONESTY

Academic dishonesty on the part of any student will result in a disciplinary grade of *F* for the course involved and also may, upon the recommendation of the appropriate dean's council, result in his suspension from the University for a stated period, at the end of which time he may petition for readmission. The disciplinary grade of "Failure—Academic Dishonesty" will be recorded for the course involved, and this grade will be employed in the computation of the quality-point index. A student so suspended shall be withdrawn from all other courses except those in which all work has been completed.

CHANGES IN PROGRAM OF STUDIES

A student may not make any changes in his approved program of studies without the approval of the Dean. Requests for change in class registration must be made on form provided in the School Office.

During the seven days following the first day of classes of a semester, courses may be added to the student's program with the approval of the instructor and the Dean.

Courses may be dropped by undergraduate students without academic penalty only during the fourteen days following the first day of classes, with the approval of the instructor, the student's adviser, and the Dean. Courses may be dropped by graduate students without academic penalty only within the first four weeks of a semester, with the approval of the instructor and the Dean.

WITHDRAWAL

A student who withdraws or is otherwise absent from the University for one semester or more must apply for readmission. If readmitted, he continues his work under the requirements and regulations in force at the time of his readmission.

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean of the School. Notification to an instructor is not an acceptable notice.

Withdrawal from a course or from the University, without academic or financial penalty, requires the permission of the Dean of the School. Permission to

withdraw from the University will not be granted a student who does not have a clear financial record.

Withdrawal from any course without academic penalty after the fourteenth day following the first day of classes of a semester may be granted by the Dean to undergraduate students only under the following conditions: (1) exceptional circumstances make the request necessary; (2) the request is submitted on the official form for late withdrawal; (3) as of the date of request, the grades in all courses involved are C or better. In exceptional circumstances the Dean may authorize withdrawal for graduate students without academic penalty after the first four weeks of a semester. In all cases financial regulations governing withdrawal remain in full effect.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

CREDIT

Credit toward a degree is given only after registration for and satisfactory completion of the required work of a course or upon the granting of advanced standing. A student who takes a course as an auditor may not take the same course later for credit.

On request the Registrar will issue to undergraduate degree candidates a balance sheet showing the amount of work completed and the requirements remaining to be met for the degree.

TRANSCRIPTS OF RECORD

Official transcripts of student records are issued on request of the student or former student who has a clear financial record. A fee of one dollar is charged for each transcript.

SUMMER SCHOOL CREDIT

A student who plans to attend summer school at another institution and apply credit so earned toward graduation from this University must first secure the written approval of the Dean. In no event will credit in excess of what might be earned in a similar period in this University be recognized.

CONTINUOUS REGISTRATION

Degree candidates are expected to maintain continuous registration until all degree requirements are satisfied. Students who have completed course registration (including the thesis) maintain continuous registration by paying one "continuous registration" fee (see page 47). By failing to register for one semester or more, the student breaks his registration and must be readmitted. The procedure for readmission for Master's candidates is the same as that for undergraduates (see page 16). A "Readmitted Student" is required to satisfy the curriculum requirements existing at the time of his readmission.

Students must be registered during the summer if they elect to take courses, are taking required examinations, are receiving guidance toward theses or dissertations, or are expecting to graduate at the end of the Summer Sessions.

Students on Military Leave see page 57.

GRADUATION REQUIREMENTS

To be recommended by the Faculty for graduation a student must have met the admission requirement of the School; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered; and be free from all indebtedness to the University. Registration, either for course work or on the "continuous registration" fee basis, is required for the semester or summer session immediately preceding the awarding of the degree.

Application for Graduation.—Application for graduation must be filed and the appropriate fee paid at the time of registration for the last semester or summer session of the senior or final year.

Students completing degree requirements during the Summer Sessions will be awarded diplomas (no formal convocation) September 30, *provided* they have completed all degree requirements and have applied for graduation as a part of registration for the Summer Sessions.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

THE LIBRARY

All students registered in the University have the privilege of using the University Library. Its stacks are open, and all students are welcome to browse at their leisure. The Student Identification Card, issued upon the payment of fees, must be presented when books are borrowed for outside use.

The loan period for most books available for outside circulation is 30 days, nonrenewable except for graduate students. A fine of 25 cents is charged for each day a book is overdue. Any book which circulates is subject to recall by the Library at any time if needed for reserve or other use. Reserve books must be used in the reserve reading room when the Library is open, except that they may be withdrawn for overnight use beginning at 8:30 p.m. A fine of 50 cents is charged for each hour or fraction thereof that a reserve book is overdue. Grades of a student are withheld until his library record is clear.

All students using the University Library are expected to be familiar with its detailed regulations, printed in the *Student Handbook* and available separately on application to any of the Library's service desks.

MILITARY LEAVE

A student called to active duty may be granted military leave for the period of active duty, upon presentation to his Dean of a copy of his orders and a petition for such leave. The maintenance of "continuous registration" is not required of the student on military leave; however, he must apply for readmission to the University well in advance of the semester in which he expects to return. If a student is granted military leave before he completes a semester for which he has paid all or part of his tuition, this payment will be credited to his account for use upon his return to the University. In no case will tuition be refunded to a student granted military leave.

UNIVERSITY POLICY ON THE RELEASE OF STUDENT INFORMATION

In general, the policy of the University is one of attempting to keep the student's record confidential and out of the hands of those who would use it for other than legitimate reasons. At the same time, the policy must be flexible enough not to hinder the student, the University, or the community in their legitimate endeavors.

No information concerning a student will be released, except as noted below, unless required by court order or subpoena, or requested in writing by the student:

1. Information which is of public record, such as whether or not the student is currently enrolled; dates of attendance; whether or not he received a degree; current address and telephone number; the school or college in which he is enrolled.

2. The issuance of formal transcripts of record to recognized institutions of higher learning; the certification of academic achievement to the various recognized professional associations (law, medicine, engineering, education, etc.); and the inspection of records, under appropriate supervision, by properly validated representatives of government investigative agencies.

UNIVERSITY POLICY ON SELECTIVE SERVICE INFORMATION

The University notifies draft boards of a student's academic status only when the student requests or authorizes, in writing, that the draft board be notified. A Selective Service Information Card is put into the registration packet of each male student registered on campus, exclusive of those in the National Law Center and the School of Medicine. This card contains the following statement:

By my signature below, I hereby authorize the University to notify my draft board of my academic status in the University, or of any changes in academic status that occur during this semester.

If the student signs the card, the University then automatically notifies the draft board. If the student does not sign the card, no notification is sent. National Law Center students and students in the School of Medicine should check with the appropriate dean's office for details of the policy in their school.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in its buildings. A "Lost and Found" Office is located in the Campus Police Office.

Cooperative Programs

CONSORTIUM OF UNIVERSITIES OF THE WASHINGTON METROPOLITAN AREA, INC.

FIVE UNIVERSITIES in Washington, D. C.—The American University, The Catholic University of America, *The George Washington University*, Georgetown University, and Howard University—have formed a Consortium through which they are coordinating the use of their respective facilities. As the arrangement develops, juniors, seniors, and graduate students in approved programs leading to degrees in any one of the universities will increasingly have the opportunity to select from the combined offerings of all five universities the particular courses which best meet their needs.

Participation is limited to campus degree candidates. The following, however, are excluded: freshman and sophomore students, and students in Canon Law, Dentistry, Medicine, Nursing, and Theology. Law students are also excluded from participation, except for candidates for the degree of Master of Laws at *The George Washington University* and Georgetown University.

Special courses, such as private instruction (as in music or art) or tutorial study and courses in preparation for passing the language requirement, are excluded from the Consortium program. Also excluded are courses offered in Reserve Officer Training Corps programs.

Students are encouraged to study the announcements of programs of all five universities. In order to participate in the Consortium program, the graduate student must obtain the approval of his adviser; the undergraduate student must obtain the approval of his dean. *A student may not take courses at another university that are available at his own.*

Registration forms and instructions are available from the registrar of the student's university. The student registers and pays at his own university for all Consortium courses.

Specific inquiries should be addressed to the Registrar.

AIR FORCE RESERVE OFFICERS' TRAINING CORPS (AFROTC)

The Department of Aerospace Studies at Catholic University of America, under provisions of an agreement between George Washington University and Catholic University, offers a two-year AFROTC program.

The successful completion of the program qualifies the student for a reserve commission in the United States Air Force upon graduation. Exceptionally well-qualified students may receive a Regular Officer appointment. The program is designed to provide education that will develop skills and attitudes vital to the career professional Air Force Officer. Emphasis is placed on qualities of leadership and other attributes essential to progressive advancement into positions of increasing responsibility as commissioned officers in the Air Force.

Full-time students who have two years remaining toward a baccalaureate or graduate degree are eligible to enter the program. Each student must meet physical and mental standards set by the Air Force. Candidates must complete six weeks of Field Training, conducted by the Air Force at designated bases, during the summer preceding enrollment into the program. A student must have and maintain a quality-point index of 2.00 or its equivalent. Appli-

cations must be made *early* in the academic year prior to the one of enrollment in the program, so that all qualification criteria may be met in time for selection consideration in the spring.

The program is offered at Catholic University. At the time of enrollment, a registration fee must be paid. There is no tuition charge. Students in the program receive a monthly retainer fee of \$50. Uniforms and textbooks are furnished without cost. Students participating in the Field Training phase are paid at a rate established by the U.S. Government (approximately \$120 a month) and are also furnished travel to and from the Field Training base.

Interested students should consult the Department of Aerospace Studies, Catholic University of America, Washington, D.C. 20017.

University Computer Center

THE UNIVERSITY COMPUTER CENTER is located on the first floor of Stuart Hall, 2013 G Street, N.W. The facilities of the Center are available for academic purposes to all registered students and to members of the instructional staff. The Center has as its principal mission the provision of a powerful computing system which serves the University in its educational and research endeavors. The Center's programming staff concentrates its efforts in conducting faculty and staff seminars, consulting with users in the preparation of complicated programs, and carrying out computer-oriented research.

The Computer Center equipment consists of an IBM system 360 Model 50 computer with 256,000 positions of core storage, a 2,314-disk storage unit providing on-line storage for more than 200 million characters, a card read/punch, a high speed line printer, and four tape drives. The principal languages that are available are FORTRAN IV, COBOL, Programming Language One (PL 1), Assembly Language, Report Program Generator (RPG), and ALGOL. In addition, there are numerous utility, statistical, data manipulation, and simulation systems available in the Computer Center Library of Programs. Facilities are available on a first-come first-served basis for preparation of programs and data.

Computer programming courses are offered by the School of Government and Business Administration, the Department of Statistics, and the School of Engineering and Applied Science. In addition, many other departments offer courses that utilize the computer as a research adjunct to course work.

The Computer Center is open 24 hours a day Monday through Thursday and until midnight on Friday. Saturday hours are 9 a.m. to 5 p.m.

The Speech and Hearing Clinic

THE SPEECH AND HEARING CLINIC, Suite 804, Joseph Henry Building, 2100 Pennsylvania Avenue, N.W., offers diagnostic and remedial work for children and adults with such communication difficulties as stuttering, lisping, cleft palate speech, cerebral palsied speech, and voice, articulatory, and hearing problems. Diagnostic and remedial work is also available for persons with nonstandard

language usage due to such conditions as hearing loss, brain damage, mental retardation, and environmental factors.

Fees.—The fee for an initial evaluation is \$20. Fees for additional specialized testing are dependent on the testing involved. The fees for individual speech or hearing therapy range from \$3 to \$10 a session. Fees are reduced for full-time students enrolled in the University and for persons receiving group therapy. Fees are payable at the Office of the Cashier.

The Reading Center

THE READING CENTER, 2018 Eye Street, N.W., offers individual diagnostic and corrective services for all levels: primary, elementary, secondary, and adult. In addition special reading improvement classes are conducted on the high school, college, and adult levels.

A complete diagnosis includes psychological tests; vision, hearing, and dominance tests; and the various reading and spelling tests. Results are interpreted, and a written report is presented in conference with the parents or the individual.

The special reading classes for high school students, college students, and adults are offered throughout the year at stated intervals. Special classes for study skills and spelling are also available. Emphasis is placed on improvement of vocabulary, speed, comprehension, and study skills. Machines such as the tachistoscope, rate accelerator, and controlled reader are also used for increasing speed of comprehension.

Reading Clinic.—The fee for individual diagnosis is \$60; for individual instruction, \$8 a lesson; for semi-individual instruction, \$6 a lesson; for instruction in small groups with common reading difficulties, \$5 a lesson.

Reading Improvement.—Classes are offered for students on high school and adult levels, including college and graduate students. Students are grouped according to needs, and emphasis is placed on vocabulary, study skills, spelling, and speed of comprehension. The fee for full-time students currently registered in the University is \$60 for twenty lessons; for other clients, \$100 for twenty lessons.

All fees are payable in advance at the Office of the Cashier.

Veterans Education

THE OFFICE OF THE REGISTRAR, Luther Rice Hall, 2121 Eye Street, N.W., assists students entitled to educational benefits as veterans or war orphans with any problems which may arise concerning their benefits. This Office also processes certification of enrollment and attendance to the Veterans Administration so that monthly allowances will be paid.

When feasible, students entitled to benefits as veterans or war orphans should consult the Office of the Registrar prior to submitting application to the Veterans Administration. All such students should obtain the instruction sheet issued

by the Office of the Registrar, which sets forth requirements to be fulfilled before certification of enrollment can be made to the Veterans Administration, and which includes other information of general interest.

The Veterans Administration is at 2033 M Street, N.W., Washington, D.C. 20421.

Alumni Associations

THE GENERAL ALUMNI ASSOCIATION

THE OBJECTIVES OF THIS ASSOCIATION are to unite the graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and to promote the general welfare of the University.

Eligible members are those who have matriculated in any school of the University and who have left the University in good standing, or any person who is or has been a member of the teaching, research, or administrative staff of the University, or of the Board of Trustees of the University. Active members are those eligible members who are current contributors (dues or otherwise) to or life members of The George Washington University General Alumni Association, the Alumni Association of any school of the University, or contributors to the Annual Support Program.

The Alumni Office is in Bacon Hall, 2000 H Street, N.W., Washington, D.C. 20006.

All alumni are urged to keep the Alumni Office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

THE ENGINEER ALUMNI ASSOCIATION OF THE GEORGE WASHINGTON UNIVERSITY, INC.

The Engineer Alumni Association was organized in 1936 and was incorporated in 1962. It has worked closely with the General Alumni Association since its organization. Its objects are to unite the graduates and Faculty of the School of Engineering and Applied Science in closer fellowship, to promote the general welfare of the School of Engineering and Applied Science and of the University at large, to foster activities of the engineering organizations recognized by the University, and to advance the profession of engineering in general.

OFFICERS OF THE ASSOCIATION FOR 1968-69

President.—Edward A. Wareham III, B.E.E. 1953; 8540 Horseshoe Lane, Potomac, Md.

Vice President.—William J. Ellenberger, B.S. in E.E. 1930, B.S. in M.E. 1934; 6419 Barnaby Street, N.W., Washington, D.C.

Secretary.—Raymond P. Morales, B.S. (E.E.) 1965; 7300 Churchill Road, McLean, Va.

Treasurer.—Harvey J. Flatt, B.E.E. 1963; 10636 Montrose Road, Bethesda, Md.

STUDENT LIFE

THE OFFICE OF THE VICE PRESIDENT FOR STUDENT AFFAIRS develops policies and procedures to complement the University's formal instruction program. This program is implemented through the offices of the Dean of Men, Dean of Women, Health Services, International Students, Psychological Clinic, Student and Alumni Career Services, and Student Activities.

STUDENT SERVICES

RESIDENCE HALLS

Complete information concerning the University's residence halls is available from the Housing Administrator, Office of the Dean of Women, George Washington University, Washington, D.C. 20006.

Information concerning off-campus housing near the University may be obtained at this Office. The reservation of rooms in private houses must be made by students.

Admission to the University does not include a room reservation. The student will receive, with his notification of acceptance, a University residence hall brochure, an application for residence hall space, a medical examination form, and a declaration of intent to attend the University. The medical examination form must be completed by the applicant and his physician and returned to the University Health Services Office. The application for residence hall space must be accompanied by a \$100 nonrefundable housing deposit (\$200 for applicants admitted by early decision). Early decision students *must* submit the deposit by January 15. The housing deposit is credited toward the fall-semester room charge. Rooms are leased for the academic year, and payment must be made in advance of each semester.

All unmarried freshmen under the age of 21 who are enrolled for twelve or more hours of academic work during the fall or spring semester or six or more hours during a summer session are required to live in the University residence halls or at home with their parents or guardians. In exceptional cases, permission to live elsewhere may be granted by the Housing Administrator.

1969-70 Residence Hall Rates for Two Semesters*

| | Room and Food Service | Room only |
|--|--------------------------|--------------|
| For Men: | | |
| Adams Hall | | \$500 |
| double room..... | \$1,050 | 450 |
| triple room..... | 1,000 | |
| Calhoun Hall | | 500 |
| double room..... | 1,050 | 450 |
| triple room..... | 1,000 | 500 |
| Madison Hall (graduate and professional students)..... | 1,050 | |
| Mitchell Hall | | 600 |
| single room..... | 1,150 | 500 |
| double room..... | 1,050 | |
| Welling Hall | | 500 |
| single room..... | 1,050 | 420 |
| double room..... | 970 | |
| For Women: | | |
| Crawford Hall (upperclass women)..... | 1,150 | 600 |
| Graduate Women's Hall..... | 1,235 | 685 |
| Strong Hall (upperclass women) | | 685 |
| single room..... | 1,235 | 600 |
| double room..... | 1,150 | |
| Thurston Hall..... | 1,150 | |

FOOD SERVICE

Residents of Thurston Hall and all resident freshman men under twenty-one are required to participate in the food service plan. The plan is optional for all other residents. All meal cards admit to the dining rooms in Thurston Hall and Mitchell Hall. Residents of Calhoun, Crawford, Madison, Strong, and Welling Halls are given preference for the use of the dining room in the University Center. Well-balanced meals are served cafeteria style seven days a week (20 meals). Food service payment does not cover University holidays or vacation periods.

HEALTH SERVICES

The Health Services Staff assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open Monday through Friday, from 9 a.m. to 10 p.m. during the academic year and from 9 a.m. to 9 p.m. during the Summer Sessions, with physician in attendance. For night and week-end emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges include (1) physical examination† of all applicants for courses in Physical Education who lack reports, approved by the Office of

* Rates are subject to change.

† A charge for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for this purpose.

Health Services, of examinations by home physicians; (2) three visits in any one illness by a member of the Health Services Staff, office or residence (District of Columbia); (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Services.* All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopaedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

These medical benefits apply only to illness or disability incurred while currently enrolled in the University. They do not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) the Director of Health Services is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of Physical Education.

HEALTH AND ACCIDENT INSURANCE

In addition to the above services, the Health Services Staff has arranged for Health and Accident Insurance, on an elective basis, for all full-time students. This policy covers the participant for 12 months, whether at home, at the University, or elsewhere.

Current yearly cost is \$34.56 (subject to change) payable at the fall registration. Arrangements can be made to pay in two equal installments at the fall and spring registrations.

This policy contract is between the individual student and the insurance carrier and is accepted at any hospital or emergency room that accepts this type of medical work. Details of the policy are available at the Health Services Office.

PSYCHOLOGICAL CLINIC

The George Washington University Psychological Clinic, 718 Twenty-first Street, N.W., offers services which are available primarily to students enrolled in the University and secondarily to high school students and to adults in the community. The latter are selected by the Clinic in accordance with training and research interests of the Clinic Staff.

* See rule (5) for exception.

The services are designed to assist individuals in the evaluation of their educational, personal, and social lives; diagnose academic difficulties and provide remedial measures such as study habits instruction and programmed instruction; and refer individuals to qualified agencies for assistance with problems not handled by the Clinic. Behavior therapy, individual and group psychotherapy, and individual and group counseling are available.

The Clinic also provides special assessments including: diagnostic measures prescribed by the School of Engineering and Applied Science, admissions tests for the University and for other selected educational institutions, and some selected assessments for business and industry.

Fees.—For students who are currently registered as degree candidates in the University, the fee is \$20; for students currently enrolled in the University but not as degree candidates, the fee is \$60; for graduates of the University, \$60; for community clients, \$85. Fees for specialized testing are dependent upon the services involved. All fees are payable at the Office of the Clinic.

INTERNATIONAL STUDENTS

International House, 2129 G Street, N.W., is the campus center for students from foreign countries. It serves also as the headquarters of the International Students' Society which seeks to promote international friendship and understanding by welcoming to its membership students from all countries, including those from the United States.

The Adviser to International Students has his Office in International House and is available for consultation each day throughout the school week.

STUDENT AND ALUMNI CAREER SERVICES OFFICE

The Student and Alumni Career Services Office, Woodhull House, 2033 G Street, N.W., provides assistance to degree-seeking students and alumni seeking full-time, part-time, temporary, or permanent employment. The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration. The Office administers the On-Campus Industrial and Government Recruitment Interview Program for seniors and graduate students, in which private companies, government agencies, service organizations, public school systems, and universities participate. Prospective teachers may establish permanent credentials files in the Student and Alumni Career Services Office. This service includes files for alumni seeking college and university faculty and administrative positions. The Office also provides individual counseling for students and alumni wishing career guidance.

RELIGIOUS LIFE

The University recognizes the contribution that religion makes to the life of its students and encourages them to participate in the various religious organizations of their own choice. Catholic, Jewish, and Protestant bodies sponsor these groups and form a link between the University and the religious community. The advisers of the religious organizations are available for counseling.

Religious services in various traditions are provided regularly for the University community as announced.

INTER-FAITH FORUM

A weekly luncheon-discussion activity called "As I See It" features guests who are asked to speak and participate in open discussion on topics concerning religious, social, and moral issues. The discussions are held in Woodhull House, 2033 G Street, N.W., Wednesdays from 12 noon to 1 p.m. Schedules are obtainable at the Religious Activities Office, 2106 G Street, N.W.

UNIVERSITY CENTER

The primary purpose of the University Center, 21st Street between G and H Streets, N.W., is to provide a broad cultural, educational, social, and recreational program, largely through the initiative and energy of student participants.

The Center includes a wide range of facilities to serve the diverse needs of the campus, including dining rooms and a rathskeller, a bookstore, lounges and study areas, a theater, bowling lanes and a billiard room, a faculty club, student organization offices and work rooms, meeting and conference rooms, an information center, music listening rooms, social areas, shower and dressing rooms, lockers, and parking accommodations.

DAVIS-HODGKINS HOUSE

The Davis-Hodgkins House, 731 Twenty-second Street, N.W., is the student center of the School, providing lounges, reading rooms, and student organization offices. The House provides convenient, comfortable facilities for the exchange of ideas and good fellowship.

STUDENT ACTIVITIES

The offices of the Vice President for Student Affairs, the Dean of Men, and the Dean of Women are responsible for all co-curricular phases of student life, such as student activities, social life, and housing. The deans are available at all times for individual counseling concerning personal adjustment to university life.

STUDENT ACTIVITIES OFFICE

The Student Activities Office is a part of the Office of the Vice President for Student Affairs. It serves as a clearing house and a coordination center for all co-curricular student activities. The staff assists student organizations in utilization of University resources, leadership training, and programming. The Office also serves as a central information agency where past and present records and rosters of all campus organizations are filed and available to the student body. Students interested in participating in any phase of University life including cultural, social, or academic programming should acquaint themselves with the facilities and functions of this Office.

STUDENT GOVERNMENT

Student Council.—The University believes in encouraging the development of responsibility in students by delegating to them considerable authority in the management of student activities. To this end, the organization of the University includes the Student Council, which, with the advice of the Coordinator of

Student Activities, is responsible for the conduct of all student activities. The Student Council is elected annually by the student body.

Committee on Student Life.—A major function of the Committee on Student Life is to review acts of the Student Council or of any other group engaged in extracurricular activities.

A second function is advisory. The Committee may offer recommendations to the Student Council on which the Council must act at its next regular meeting. It may also make recommendations to the President of the University at his request or on its own initiative.

Despite its broad powers, the Committee acts only when it believes that a vital interest of the University has been overlooked. The Committee, appointed annually by the President, is composed of 13 members, at least 6 of whom are students and at least 6 faculty members.

ELIGIBILITY FOR STUDENT ACTIVITIES

Any student registered in the University is eligible to participate in nonathletic student activities of the University; however, a student having a scholastic average of less than 2.00 is not eligible to be:

1. A member of the Band, Dance Production groups, Enosinian Debate Society, Glee Club, Cheerleaders, Student Council, Religious Council, Panhellenic Council, Interfraternity Council, Engineers' Council, Student Life Committee, residence hall councils, any publications staff, or the Hearing Committee on Student Affairs;

2. Any officer, permanent committee chairman, or member of the executive board of any activity.

The rules and policies of the Southern Conference govern participation in intercollegiate athletics.

THE ENGINEERS' COUNCIL

The Engineers' Council is the student governing body for the School of Engineering and Applied Science, composed of elected representatives from each level class and from the graduate student body, from each student organization in the School, the Business Manager of the *Mecheleciv*, and the House Manager of the Davis-Hodgkins House. The purpose of the Council is to provide liaison between the student body of the School and the Faculty, Administration, and Student Government of the University in all matters affecting the general interests and welfare of the student body, the School, or the University. The Council is maintained financially by the Engineers' Council Fee paid by each student in the School, and sponsors the engineers' student magazine, *Mecheleciv*; the Engineers' Mixers; Engineers' Ball; and the Annual Christmas Tree Ceremony in the University Yard. Council meetings are open to all students in the School.

The Council acts as the directing body for *Mecheleciv*, which is published six times a year and is free to all students in the School. This magazine includes campus and alumni news, a calendar of events, news of the student organizations, and articles on engineering by students and faculty members. The magazine is published by a student Board of Editors and a volunteer student staff. The control and administration of all student activities are outlined in the *Student Handbook*.

SPORTS

The University is a member of the Southern Conference and the National Collegiate Athletic Association. Its teams participate in intercollegiate contests in basketball, baseball, tennis, golf, rifle, soccer, and crew.

The University maintains a complete program of intramural sports for both men and women. The men's program is conducted by the Intramural Council. The Women's Athletic Association and Intersorority Athletic Board cooperate with the Department of Physical Education in conducting the women's intramural and informal extramural sports program in tennis, hockey, basketball, canoeing, rifle, swimming, golf, bowling, and badminton.

PERFORMING ARTS

Students may participate in dance, drama, forensics, music, and radio broadcasting through the following organizations: Enosinian Debating Society; George Washington University Dance Company; Station WRGW; University Chamber Choir, Chorus, Orchestra; and University Players. Each of these groups presents programs during the academic year.

With the cooperation of the Curator of Art, an annual student art exhibit is presented.

ANNUAL EVENTS

Recreation Program.—The Student Council and the departments of Physical Education arrange dances, movies, and trips at frequent intervals for all students.

Concert Program.—The Student Council sponsors a concert each semester at which nationally known entertainers perform.

Orchestra Series.—The University Orchestra offers a series of concerts throughout the academic year.

Art Exhibits.—The work of locally, nationally, and internationally known artists is shown in monthly exhibits in the George Washington University Art Gallery in Lisner Auditorium.

Engineers' Mixers.—At the beginning of each semester the Engineers' Council sponsors a program of orientation, good fellowship, and entertainment to introduce new students.

Engineers' Week.—Sponsored by the Engineers' Council to acquaint high school students and their parents with the School of Engineering and Applied Science.

Homecoming.—Scheduled about the middle of the fall semester, Homecoming is the primary festive period of the school year. It includes University theater productions and other activities.

Religion in Life Program.—Special emphasis is given to the place of religion in contemporary society in this program of events during the fall and spring semesters.

Holiday Season.—The University traditionally greets the holiday season with appropriate ceremonies including the lighting of the Christmas tree (given and decorated by the students of the School of Engineering and Applied Science), the singing of Christmas music, and service projects.

Engineers' Ball.—The Engineers' Council sponsors the Engineers' Ball, a social event for students and alumni.

May Day.—This is the traditional time for the award of honors in student activities. Mortar Board and Omicron Delta Kappa announce and present their new members.

STUDENT ORGANIZATIONS

HONOR SOCIETIES

Sigma Xi.—A national scientific honor society, the purpose of which is to encourage original investigation in science, pure and applied. Outstanding graduate students in the sciences are eligible for full membership, and undergraduates who have shown marked ability in research may be elected to associate membership.

Alpha Lambda Delta.—A national fraternity established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman women who attain a scholastic average of at least 3.50.

Delphi.—An intersorority honorary society.

Delta Sigma Rho-Tau Kappa Alpha.—A national forensic society.

Gate and Key.—An intrafraternity honorary society.

Mortar Board.—A national society for senior college women, stressing leadership, scholarship, and service.

Omicron Delta Kappa.—A national fraternity emphasizing leadership in extracurricular activities.

Order of Scarlet.—A service honorary society for sophomore and junior men.

Phi Eta Sigma.—A national fraternity, established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman men who attain a scholastic average of at least 3.50.

Sigma Tau.—A national engineering honorary fraternity, the purpose of which is to recognize scholarship and professional attainment.

Tassels.—A service honorary society for sophomore women.

Tau Beta Pi.—A national engineering honorary fraternity, the purpose of which is to recognize distinguished scholarship and exemplary character.

PROFESSIONAL ORGANIZATIONS

American Society of Civil Engineers (Student Chapter).

American Society of Mechanical Engineers (Student Chapter).

Institute of Electrical and Electronic Engineers (Student Chapter).

Society for the Advancement of Management.—Membership limited to students in engineering and public or business administration.

Theta Tau (Gamma Beta Chapter).—A national professional (engineering) fraternity. Membership by invitation to outstanding students who have completed successfully at least the first year in the School of Engineering and Applied Science.

SOCIAL FRATERNITIES

Alpha Epsilon Pi, Delta Tau Delta, Kappa Sigma, Phi Sigma Delta, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Alpha Mu, Sigma Chi, Sigma Nu, Sigma Phi Epsilon, Tau Epsilon Phi, Tau Kappa Epsilon.

SOCIAL SORORITIES

Alpha Delta Pi, Alpha Epsilon Phi, Chi Omega, Delta Gamma, Delta Phi Epsilon, Kappa Alpha Theta, Kappa Kappa Gamma, Phi Sigma Sigma, Pi Beta Phi, Sigma Delta Tau, Zeta Tau Alpha.

STUDENT PUBLICATIONS

The Cherry Tree (the annual), *The University Hatchet* (semi-weekly newspaper), *Mecheleciv* (engineers' publication), *The Potomac* (literary magazine), *The Wig* (humor magazine).

RELIGIOUS ORGANIZATIONS

Baptist Student Union, B'nai B'rith Hillel Foundation, Christian Science Organization, Eastern Orthodox Club, Episcopal Student Association, Lutheran Student Association, Newman Club, Unitarian-Universalist Club, United Christian Fellowship, Wesley Foundation, and a Religious Council comprised of representatives of all religious organizations.

OTHER ORGANIZATIONS

Alpha Phi Omega (national service fraternity), Alpha Theta Nu (scholarship winners), Big Sisters, Cheerleaders, Colonial Boosters, German Outing Club, Interfraternity Council, International Students' Society, Intersorority Athletic Board, Junior Panhellenic Association, Libertarian Society, Old Men, People-to-People, Residence Hall Councils, Senior Panhellenic Association, SERVE, Station WRGW, Student Council, Student Grotto of the National Speleological Society, Students for a Democratic Society, University Pep Band, Young Democrats Club, Young Republican Club.



THE UNIVERSITY

HISTORY AND ORGANIZATION

THE GEORGE WASHINGTON UNIVERSITY had its beginning in 1821 as The Columbian College in the District of Columbia. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University. The debt of the University to George Washington whose name it bears is an intangible one.

George Washington, as President and as private citizen, had urgently insisted upon the establishment of a National University in the Federal City. There he hoped that, while being instructed in the arts and sciences, students from all parts of the country would acquire the habits of good citizenship, throwing off local prejudices and gaining at first hand a knowledge of the practice, as well as the theory, of republican government. To further the materialization of his hopes, Washington left a bequest of fifty shares of The Potomac Company "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." The Congress never extended "a fostering hand." The Potomac Company passed out of existence, and Washington's bequest became worthless.

Fully conscious of Washington's hopes, but motivated primarily by a great missionary urge and the need for a learned clergy, a group of dedicated ministers and laymen sponsored a movement for the establishment of a college in the District of Columbia. Inspired largely by the zeal and energy of the Reverend Luther Rice, they raised funds for the purchase of a site and petitioned Congress for a charter. After much delay and amendment, Congress granted a charter which was approved by President Monroe on February 9, 1821. To safeguard the College's nonsectarian character it provided "that persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages thereof, for or on account of his sentiments in matters of religion."

During the entire time when the institution was known as Columbian College, its activities were centered on College Hill, a tract of forty-six and a half acres between the present Fourteenth and Fifteenth Streets and extending north from Florida Avenue to somewhat beyond Columbia Road. The Medical School was located downtown. For the better part of the Columbian University period.

the buildings of the University were situated along H Street between Thirteenth and Fifteenth Streets. The Medical School group still remains there.

During the last half century the University's present plant has been developed in that section of the old First Ward familiarly known as "Foggy Bottom," between Nineteenth and Twenty-fourth Streets, south of Pennsylvania Avenue. Within a few squares are the White House, the Department of the Interior, the State Department, the World Bank, and many other government offices and international agencies. The area is not without its reminders of historic interest to the University. President Monroe, who signed the Charter, lived at 2017 Eye Street. The first President of the Board of Trustees, the Reverend Obadiah B. Brown, was for fifty years the pastor of a church at Nineteenth and Eye Streets, and Washington selected Twenty-third and E Streets as the site of the National University he hoped to see established.

The University as it is now organized consists of Columbian College of Arts and Sciences (undergraduate); the Graduate School of Arts and Sciences; the professional schools, which include the National Law Center and the schools of Medicine, Engineering and Applied Science, Education, Government and Business Administration, and Public and International Affairs; the College of General Studies; the Division of University Students; and the Summer Sessions.

The George Washington University is privately endowed and is governed by a self-perpetuating Board of Trustees of which the president is an ex officio member.

THE UNIVERSITY LIBRARIES

The Library collections of the University are housed in the University Library, the general library of the University, and in the departmental libraries of law and medicine.

These collections contain 476,902 volumes—333,305 in the University Library, 104,436 in the Law Library, and 39,161 in the Medical Library. Approximately 30,000 volumes a year are added to the Library's resources. Endowments, supplementing the University appropriation, provide books in the fields of American civilization, American literature, foreign service, history, public finance, and the social sciences; and gifts from many sources have enriched the collections. The Libraries currently receive 3,606 periodicals.

Information concerning the use of the Libraries may be obtained at the Library service desks.

The Library is administered for the curricular, reference, and recreational needs and interests of the students. Instruction in the use of the library is given upon request by the reference librarians. The Library endeavors to assist students and all members of the University to use the rich library resources of Washington and the unusual opportunities they offer for extensive research. Interlibrary loan arrangements are maintained with other libraries in the city and in the United States.

The student has access to the Library of Congress, the Public Library of the District of Columbia and its branches, the libraries of the Pan American Union, the Bureau of Railway Economics, the U.S. Department of Agriculture, the Smithsonian Institution, the National Library of Medicine, and many of the other great special collections of the government departments.

The hours of the University Library are Monday through Friday, 8:30 a.m. to 12 midnight; Saturday, 9 a.m. to 6 p.m.; Sunday, 1 p.m. to 12 midnight.

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CONVERSION TABLE FOR RENUMBERING COURSES IN ENGINEERING AND APPLIED SCIENCE

| Previous Number | New Number | Previous Number | New Number | Previous Number | New Number |
|--------------------|---------------------|--------------------|-------------------------|--------------------|----------------------------------|
| Ap S 7 | no change | Ap S 263 | EE 231 | Engr 201 | CE 201 |
| Ap S 9 | EE 31 | Ap S 264 | EE 232 | Engr 202 | CE 202 |
| Ap S 10 | EE 32 | Ap S 266 | EE 234 | Engr 203 | CE 203 |
| Ap S 29 | EE 11 | Ap S 267 | EE 211 | Engr 204 | CE 204 |
| Ap S 30 | EE 12 | Ap S 268 | EE 212 | Engr 205 | CE 205 |
| Ap S 31 | EE 113 | Ap S 269 | EE 215 | Engr 206 | CE 206 |
| Ap S 50 | EE 142 | Ap S 270 | EE 216 | Engr 211 | CE 211 |
| Ap S 55 | EE 172 | Ap S 273 | EE 243 | Engr 212 | CE 212 |
| Ap S 59-60 | no change | Ap S 274 | EE 244 | Engr 216 | ME 216 |
| Ap S 62 | CE 168 | Ap S 275 | EE 221 | Engr 218 | EE 226 |
| Ap S 63 | ME 126 | Ap S 276 | EE 222 | Engr 219 | EE 225 |
| Ap S 64 | ME 155 | Ap S 277 | EE 241 | Engr 220 | EE 228 |
| Ap S 65 | ME 134 | Ap S 278 | EE 242 | Engr 221 | EE 227 |
| Ap S 66 | ME 161 | Ap S 280 | ME 280 | Engr 222 | EE 281 |
| Ap S 70 | CE 161 | Ap S 282 | ME 282 | Engr 223 | EE 282 |
| Ap S 71-72 | ME 171-72 | Ap S 285 | ME 285 | Engr 230 | EM 230 |
| Ap S 85 | ME 131 | Ap S 295 | ME 295 | Engr 231 | EE 253 |
| Ap S 87 | ME 187 | Ap S 298 | CE, EE, EM, ME, MeaS | Engr 232 | EE 251 |
| Ap S 101 | CE 140 | | 298 | Engr 233 | EE 233 |
| Ap S 105-6 | MeaS 101-2 | | | Engr 234 | EE 235 |
| Ap S 113-14 | no change | Engr 10 | CE 170 | Engr 235 | EE 247 |
| Ap S 115 | E Ad 115 | Engr 11-12 | CE 191-92 | Engr 236 | EE 248 |
| Ap S 120 | EE 133 | Engr 18 | EE 20 | Engr 243 | EE 277 |
| Ap S 121-22 | CE 121-22 | Engr 19 | EE 121 | Engr 244 | EE 278 |
| Ap S 130 | EE 177 | Engr 20 | EE 122 | Engr 250 | CE 250 |
| Ap S 132 | EE 114 | Engr 21 | EE 51 | Engr 252 | CE 252 |
| Ap S 162 | EE 181 | Engr 31 | ME 148 | Engr 255 | CE 255 |
| Ap S 163 | EE 182 | Engr 49 | EE 160 | Engr 256 | CE 256 |
| Ap S 198 | CE, EE, ME, MeaS | Engr 52 | MeaS 111 | Engr 260 | E Ad 283 |
| | 198 | Engr 53 | MeaS 112 | Engr 261 | E Ad 284 |
| Ap S 201 | EE 271 | Engr 54 | MeaS 121 | Engr 270 | MeaS 201 |
| Ap S 202 | EE 272 | Engr 55 | MeaS 122 | Engr 271-72 | MeaS 203-4 |
| Ap S 203 | EE 273 | Engr 56 | MeaS 123 | Engr 273 | MeaS 242 |
| Ap S 211 | no change | Engr 86 | ME 194 | Engr 274 | MeaS 243 |
| Ap S 212 | no change | Engr 100 | EE 62 | Engr 275 | MeaS 244 |
| Ap S 217 | EM 217 | Engr 101 | MeaS 131 | Engr 284 | ME 284 |
| Ap S 219 | EM 219 | Engr 102 | MeaS 132 | Engr 286 | ME 286 |
| Ap S 220 | EM 220 | Engr 105-6 | EE 163-64 | Engr 287 | EE 254 |
| Ap S 221 | EM 221 | Engr 111 | ME 152 | Engr 288 | EE 257 |
| Ap S 222 | EM 222 | Engr 113 | CE 165 | Engr 289 | EE 256 |
| Ap S 223 | EM 223 | Engr 121 | EE 153 | Engr 290 | EE 258 |
| Ap S 231 | ME 231 | Engr 122 | EE 154 | Engr 291-92 | ME 291-92 |
| Ap S 232 | ME 232 | Engr 131-32 | ME 191-92 | Engr 293-94 | ME 293-94 |
| Ap S 238 | EM 238 | Engr 140 | E Ad 140 | Engr 298 | CE, EE, EM, ME 298 |
| Ap S 242 | EE 230 | Engr 141 | CE 183 | | CE, E Ad, EE, EM, ME, MeaS |
| Ap S 254 | CE 254 | Engr 142 | CE 194 | Engr 299- 300 | 299-300 |
| Ap S 259 | EM 259 | Engr 144 | CE 163 | | |
| Ap S 260 | EM 260 | Engr 171 | EE 157 | | |
| Ap S 261 | EM 261 | Engr 172 | EE 158 | | |
| Ap S 262 | CE 263 | Engr 198 | CE, EE, ME, MeaS 198 | | |

COURSES OF INSTRUCTION

THE COURSES OF INSTRUCTION in the School of Engineering and Applied Science are listed on the following pages. Courses numbered from 1 through 199 are planned for undergraduate credit, although certain courses may be taken for graduate credit when arrangements are approved in advance by the instructor and the Dean. Courses numbered 201 to 300 are planned for graduate credit and may in certain instances be taken by qualified undergraduate students. Courses numbered from 301 to 400 are primarily for doctoral students.

The number of semester hours credit given for the satisfactory completion of a course is indicated in parentheses after the name of the course. Thus, a year course giving three hours of credit each semester is marked (3-3), and a semester course giving three hours credit is marked (3). A semester hour consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

The Undergraduate and Graduate Catalogue contains information on courses in mathematics, physics, chemistry, the humanities, the social sciences, and other subjects of interest to engineering students.

Students who are not candidates for degrees but who wish to take courses offered by the School of Engineering and Applied Science should apply for admission to the Division of University Students.

Applied Science

UNDERGRADUATE COURSES

Interdepartmental offerings.

7 Flight in Space (3)

Introduction to the methods of science and the continuity of development of these methods from prehistoric times to the present. Basic differences of method in the sciences and in the humanities are explored. Explanation of mechanics of space flight, rocketry, and flight on interplanetary or earth-bound missions. Prerequisite: high school algebra, geometry, and physics. (Spring)

59-60 Introductory Analytical Mechanics I-II (4-4)

Mechanics of particles and rigid bodies; virtual work, energy, and momentum principles. Deformable body mechanics; stress and strain concepts; bending, twisting, and buckling of slender beams. Prerequisite or concurrent registration: Applied Science 113. (Academic year; summer 1969—Applied Science 59)

113-14 Engineering Analysis I-II (3-3)

Analytical methods appropriate to the solution of engineering problems. *First half:* Mathematical topics include ordinary differential equations, vector calculus, and integral theorems; elements of matrices; complex algebra. *Second half:* Mathematical topics include Bessel functions, Legendre polynomials, Fourier series and integrals, Laplace transform, introduction to partial differential equations and boundary value problems. Prerequisite: Mathematics 24. Applied Science 113 is prerequisite to Applied Science 114. (Academic year; summer 1969—Applied Science 113)

GRADUATE COURSES

Offered by the Department of Engineering Mechanics.

211 Mathematical Methods in Applied Science I (3)

Methods and theory of functions of complex variables and partial differential equations and their application. May be taken concurrently with Applied Science 212. Prerequisite: graduate status. (Fall and spring; summer 1969)

212 Mathematical Methods in Applied Science II (3)

Methods and theory of tensor analysis, calculus of variations, and integral equations and their application. May be taken concurrently with Applied Science 211. Prerequisite: graduate status. (Fall and spring)

216 Solid State for Engineers (3)**225 Mechanics of Space Flight (3)*****228 Dynamic Stability of Airplanes (3)*****235 Physical Metallurgy (3)*****241 Quantum Mechanical Treatment of Metals (3)*****245 Advanced Propulsion Systems (3)*****248 Physical Ceramics (3)*****255-56 Aerothermochemistry I-II (3-3)*****296 Kinetic Theory of Gases (3)**

* Offered only at NASA-Langley Research Center; may be offered on campus when arranged.

Electrical Engineering*

Professors Louis de Pian (*Chairman*), N.T. Grisamore, R.B. Heller, T.J. Carroll (*Research*), Guenther Hintze (*Research*), R.S. Ledley (*Research*)
Professorial Lecturer W.F. Crosswell
Associate Professors P.H. Sawitz, E.H. Braun, Marvin Eisenberg, A.C. Meltzer
Associate Professorial Lecturers M.E. Brady, S.J. Raff, C.L. Fricke
Assistant Professors Nicholas Kyriakopoulos, N.A. Sloan, Pi-Fuay Chen, Val-loh Vimolvanich
Assistant Professorial Lecturers D.O. Baechler, D.C. Rohlf, J.K. Cooper, C.S. Maiorana, W.H. Carter, W.H. Fuhr, M.D. Aldrich, Constantine Balanis, M.M. Bruce, Maurice Morin, M.I. Celebiler, Charles Fain, F.S. LeBeau, J.H. O'Hara, J.J. Rocchio, Bhupendraprasad Shah, Paul Willis

UNDERGRADUATE FIELD

Electrical Engineering (see pages 22-25).

SUBJECT AREAS—UNDERGRADUATE

Faculty in charge of each subject area are listed in parentheses.

Networks

(de Pian, Kyriakopoulos)

- 11-12 Linear Networks I, II
- 113 Network Analysis and Design
- 114 Linear Active Networks

Electronics

(Chen, Grisamore)

- 20 Introductory Engineering Electronics
- 121 Engineering Electronics and Design
- 122 Pulse and Waveshaping Electronic Design

Fields and Waves

(Braun, Carroll, Heller)

- 31-32 Fields and Waves I, II
- 133 Electromagnetic Waves

Communications

(Sawitz)

- 142 Information, Transmission, Modulation, and Noise

Computer Science

(Grisamore, Kyriakopoulos, Ledley, Meltzer)

- 51 Applications of Computers
- 152 Introduction to Digital Computers
- 153 Design of Switching Systems
- 154 Digital Computer Design
- 157 Machine and Assembly Language Programming
- 158 Algorithmic Methods and High-level Languages

Laboratories and Measurement

(Chen, de Pian)

- 62 Introductory Electrical Engineering Laboratory
- 160 Electrical Measurements
- 163-64 Electrical Engineering Laboratory I-II

Controls and Systems

(Chen, Hintze, Vimolvanich)

- 172 Control Systems
- 177 Electrical Energy Conversion

Medical Engineering

(Eisenberg, Ledley)

- 181-82 Engineering Introduction to Medicine I, II

* Staff of Instruction for the academic year 1968-69.

FIELDS AND AREAS OF CONCENTRATION—GRADUATE

Faculty in charge of each field or area of concentration are listed in parentheses.

Networks

(de Pian, Kyriakopoulos)

- 211-12 Advanced Network Analysis I, II
- 215-16 Linear Network Synthesis I, II
- 319 Networks Research

Electronics

(Braun, Grisamore)

- 221-22 Physical Electronics I, II
- 225 Nonlinear Electronics
- 226 Optical Electronics
- 227 Industrial Electronics
- 228 High-frequency Electronics
- 329 Electronics Research

Fields and Waves

(Braun, Carroll, Heller)

- 230 Magnetohydrodynamics
- 231 Field Analysis and Potential Theory
- 232 Electrodynamics
- 233 Microwaves and Components
- 234 Electromagnetic Wave Propagation
- 235 Antennas
- 339 Fields and Waves Research

Communications

(Braun, Sawitz)

- 241-42 Information Theory I, II
- 243-44 Communication Theory I, II
- 246 Digital Communications
- 247 Communication Systems
- 248 Microwave Communication Systems
- 349 Communications Research

Computer Science

(Grisamore, Kyriakopoulos, Ledley, Meltzer)

- 250 Application of Numerical Methods
- 251 Computing Systems
- 253 Finite State Machines
- 254 Finite Automata
- 255 Pattern Recognition, Graphics and Optical Processing
- 256 Analog and Hybrid Computers
- 257 Digital Computer Programming Systems
- 258 Design of Compilers and High-level Languages
- 359 Computer Science Research

Controls and Systems

(Chen, Hintze, Vimolvanich)

- 271 Automatic Control in State Space Setting
- 272 Digital Control Systems
- 273 Optimal Programming and Control
- 275 Stochastic Processes in Automatic Control
- 276 Cybernetics
- 277 Space Communication Systems
- 278 Spacecraft Systems Design
- 371 Simulation Methods for System Analysis
- 372 Analysis and Control of Large Systems
- 379 Controls and Systems Research

Medical Engineering

(Eisenberg, Ledley)

- 281 Electronic Measurements in Medicine
- 282 Instrumentation in Medical Electronics
- 389 Medical Engineering Research

UNDERGRADUATE COURSES

11 Linear Networks I (3)

(Formerly Applied Science 29)

Circuit concepts, elements, and parameters; network conventions and equations: mesh and node analysis; network solutions using differential

equations and initial conditions; Laplace transform; transient and steady-state response; impedance concepts; energy and power; resonance. Prerequisite: Applied Science 113, Physics 32. (Fall—day and evening)

12 Linear Networks II (3)

(Formerly Applied Science 30)

Singular functions; network functions, poles and zeros; total response; time and frequency domains; convolution theorems; Fourier analysis, spectra; frequency response, Bode plots; two-port parameters. Prerequisite: Applied Science 114, Electrical Engineering 11. (Offered every year: spring—day; also 1970–71 and alternate years: spring—evening)

20 Introductory Engineering Electronics (3)

(Formerly Engineering 18 Engineering Electronics I)

Various types of devices used in electronic engineering considered from the point of view of the physics of their operation and from the engineering point of view of their application to electronic circuits. Solid-state, vacuum, and gaseous devices. Primary emphasis on application of these elements in power supplies and in linear amplifiers. Introduction of design concepts through use of graphical techniques. Prerequisite: Electrical Engineering 11. (Spring—day and evening)

31 Fields and Waves I (3)

(Formerly Applied Science 9)

Vector calculus, orthogonal coordinate systems, Laplace and Poisson's diffusion and wave equations, scalar and vector potentials, Maxwell's equations, boundary value problems. Prerequisite: Physics 32. Prerequisite or concurrent registration: Applied Science 114. (Offered every year: fall—day; also 1970–71 and alternate years: fall—evening)

32 Fields and Waves II (3)

(Formerly Applied Science 10)

Conformal transformations, method of images, one-dimensional waves, transmission lines, use of Smith Chart, waves in solids and fluids. Prerequisite: Electrical Engineering 31. (Offered every year: spring—day; also 1970–71 and alternate years: spring—evening)

51 Applications of Computers (3)

(Formerly Engineering 21)

Solution of problems on digital computers, using machine language, FORTRAN, data processing, and numerical methods. Writing, debugging, and running programs on a digital computer. (Fall—day and evening)

62 Introductory Electrical Engineering Laboratory (3)

(Formerly Engineering 100)

Use and application of standard electronic laboratory equipment. Application of instrumentation through experiments in basic network theorems. Prerequisite: Electrical Engineering 11, 31. (Offered every year: spring—day; also 1969–70 and alternate years: spring—evening)

113 Network Analysis and Design (3)

(Formerly Applied Science 31 Linear Systems)

Application of matrices and linear graphs to electrical networks; trees, circuits, cut-sets; network equations; signal-flow graphs; introduction to state-space techniques; computer solutions; network transfer functions; properties and synthesis of two-element, one-port networks; filter theory

and design; computer-aided circuit design. Prerequisite: Electrical Engineering 12, 20. (Offered every year: fall—day; also 1970–71 and alternate years: fall—evening)

114 Linear Active Networks (3)

(Formerly Applied Science 132 Active Networks)

Description of networks by terminal and port concepts; power and scattering parameters; analysis of active networks, including negative impedance converters, gyrators, etc.; interconnection of networks; properties of active networks, including reciprocity, stability, activity, and feedback. Prerequisite: Electrical Engineering 113. May be taken for graduate credit. (Spring—day and evening)

121 Engineering Electronics and Design (3)

(Formerly Engineering 19 Engineering Electronics II)

Graphical analysis and design beyond the level covered in Electrical Engineering 20. Introduction of incremental analysis and design methods to electronic circuits; use of equivalent circuits: amplifiers, oscillators, modulation, and demodulation. Prerequisite: Electrical Engineering 20. (Offered every year: fall—day; also 1970–71 and alternate years: fall—evening)

122 Pulse and Waveshaping Electronic Design (3)

(Formerly Engineering 20 Engineering Electronics III)

Introduction to and familiarization with the type of nonlinear circuits used in modern day computer and communications systems. Pulse, sweep, switching, and logic circuits; counting and timing circuits. Prerequisite: Electrical Engineering 121. (Offered every year: spring—day; also 1970–71 and alternate years: spring—evening)

133 Electromagnetic Waves (3)

(Formerly Applied Science 120)

Characteristics of common wave-guides, miscellaneous wave-guiding systems; wave propagation in anisotropic media, resonant cavities; n-port wave-guide junctions; the long straight dipole antenna; linear antenna arrays; arrays of arrays. Prerequisite: Electrical Engineering 32. May be taken for graduate credit. (Fall—day and evening)

142 Information Transmission, Modulation, and Noise (3)

(Formerly Applied Science 50)

Basic concepts of information theory. Fourier transform, time and frequency division multiplexing, amplitude and angle modulation, autocorrelation and cross-correlation, transmission of information over noisy channels. Prerequisite: Electrical Engineering 113, 121. (Offered every year: spring—day; also 1969–70 and alternate years: spring—evening)

152 Introduction to Digital Computers (3)

Introduction to the use and structure of digital computers, addressing methods, data processing, and machine language programming; Boolean algebra and introduction to the design of combinational switching circuits; number systems and arithmetic in digital machines; machine subsystems and their interconnections; use of software systems and software-hardware relationships. Prerequisite: Electrical Engineering 51 or permission of instructor. (Offered every year: spring—day; also 1970–71 and alternate years: spring—evening)

153 Design of Switching Systems (3)*(Formerly Engineering 121 Switching Networks)*

Switching algebra and Boolean logic; analysis and design of switching devices; design of combinational and sequential logic networks; minimization techniques and their use in logic design; electronic implementation of logic; number systems and codes, geometric interpretation, card error-correcting codes; encoding and decoding; logic and electronic design of functional digital units. Prerequisite: Electrical Engineering 152 or permission of instructor. May be taken for graduate credit. (Fall—day and evening; summer 1969)

154 Digital Computer Design (3)*(Formerly Engineering 122 Digital Computers)*

Logic and electronic design of functional digital units, design of computer subsystems, flow of information and logical flow diagrams in timing and control; design of memory, arithmetic, and I/O units; binary and decimal machine arithmetic; design of a digital computer. Prerequisite or concurrent registration: Electrical Engineering 153 or permission of instructor. May be taken for graduate credit. (Spring—day and evening; summer 1969)

157 Machine and Assembly Language Programming (3)*(Formerly Engineering 171)*

Machine and assembly language programming in fixed and variable word-length computers; techniques in addressing and machine control; data structures and data processing; use of subroutine linkages; co-routines, pushdown lists, list processing, loops and input-output subroutines; use of a macro-assembly language; sorting, merging, arrays, and data fields in data processing. Prerequisite: Electrical Engineering 152 or equivalent, or permission of instructor. May be taken for graduate credit. (Fall—evening)

158 Algorithmic Methods and High-level Languages (3)*(Formerly Engineering 172)*

Introduction to high-level procedural and problem-oriented computer languages; data structures and choice of a data processing language. List processing, string processing, and introduction to information retrieval; large data bases and their use in time-shared systems; simulation languages; introduction to heuristic programming. Prerequisite: Electrical Engineering 51 or equivalent and permission of instructor. May be taken for graduate credit. (Spring—evening)

160 Electrical Measurements (3)*(Formerly Engineering 49)*

Electrical measurements, from direct current through radio frequencies; techniques; detectors; bridges; measurement of current, voltage, power, resistance, capacitance, inductance, energy, phase angle, frequency, and time; dielectric and magnetic measurements; topics in high-frequency measurement, including field strength, signal-to-noise ratio, impedance, attenuation. Prerequisite: Electrical Engineering 12, 20. (Spring—evening)

163-64 Electrical Engineering Laboratory I-II (3-3)*(Formerly Engineering 105-6)*

Experiments in support of courses in networks, electronics, and fields and waves. The student is required to begin a design project in the first half

of the course; the completion of this project is the major effort of the second half. Prerequisite: Electrical Engineering 62. Electrical Engineering 163 is prerequisite to 164. (Offered every year: academic year—day; also 1969–70 and alternate years: academic year—evening)

172 Control Systems (3)

(Formerly Applied Science 55)

Analysis and design of linear feedback control systems. Applications of stability criteria, steady-state and transient analyses. Prerequisite: Electrical Engineering 12, 20. (Offered every year: spring—day; also 1970–71 and alternate years: spring—evening)

177 Electrical Energy Conversion (3)

(Formerly Applied Science 130)

Fundamentals of electromechanical energy conversion. Electromechanical transducers and their equivalent circuits, three-phase and single-phase a-c rotating machines, d-c machines, rotating machines as circuit elements. Prerequisite: Electrical Engineering 12. (Offered every year: fall—day; also 1969–70 and alternate years: fall—evening)

181 Engineering Introduction to Medicine I (3)

(Formerly Applied Science 162)

The first of a two-semester sequence. Designed to give the engineering student a communicating knowledge of medicine. Material presented is based on the School of Medicine curriculum and is taught from a systems viewpoint with major emphasis on concepts. Covers preclinical medical subjects. Prerequisite: senior status. May be taken for graduate credit. (Fall—evening)

182 Engineering Introduction to Medicine II (3)

(Formerly Applied Science 163)

The second semester of a two-semester sequence covering the clinical aspects of medicine. Designed to introduce the engineering student to some of the practical aspects of medicine. Involves considerable interaction with physicians and other medical personnel. Prerequisite: Electrical Engineering 181. May be taken for graduate credit. (Spring—evening)

198 Research (1 to 3)

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring—as arranged)

GRADUATE COURSES

211 Advanced Network Analysis I (3)

(Formerly Applied Science 267)

Network theorems; network functions, relationship of parts of network functions; analytic properties. Fourier analysis, impulse response, convolution, numerical techniques for computer solution. Computer-aided design. Prerequisite: Electrical Engineering 12 or permission of instructor. (1969–70 and alternate years: fall—evening; 1970–71 and alternate years: fall—day)

212 Advanced Network Analysis II (3)*(Formerly Applied Science 268)*

Applications of linear graphs to networks; topological analysis; formulation and solution of state-space equations; formulation for computer solution. Advanced network properties, realizability, causality, controllability, and observability concepts. Prerequisite: Electrical Engineering 211. (1969-70 and alternate years: spring-evening; 1970-71 and alternate years: spring-day)

215 Linear Network Synthesis I (3)*(Formerly Applied Science 269)*

Properties and testing of positive real functions. Synthesis of LC, RL, RC one-port networks. Brune and Bott-Duffin synthesis techniques. Introduction to two-port ladder and lattice synthesis. Introduction to the approximation problem. Prerequisite: Electrical Engineering 12 or permission of instructor. (1969-70 and alternate years: fall-day; 1970-71 and alternate years: fall-evening)

216 Linear Network Synthesis II (3)*(Formerly Applied Science 270)*

Advanced techniques in passive one-port and two-port synthesis. Active network synthesis using discrete and integrated components. Advanced topics in the approximation problem. Prerequisite: Electrical Engineering 215. (1969-70 and alternate years: spring-day; 1970-71 and alternate years: spring-evening)

221 Physical Electronics I (3)*(Formerly Applied Science 275)*

Theoretical principles underlying the operation of electronic devices; classical mechanics and classical statistical mechanics, the quantum theory, wave and matrix mechanics, quantum statistics. Prerequisite: graduate status. (1969-70 and alternate years: fall-evening; 1970-71 and alternate years: fall-day)

222 Physical Electronics II (3)*(Formerly Applied Science 276)*

The Boltzmann transport equation, band theory of solids, time dependent perturbation theory, group theory. Applications to semiconductor and other solid-state devices such as transistors, tunnel diodes, masers, and lasers. Prerequisite: Electrical Engineering 221. (1969-70 and alternate years: spring-evening; 1970-71 and alternate years: spring-day)

225 Nonlinear Electronics (3)*(Formerly Engineering 219)*

Analysis and design of electronic components and systems operating as switching, sweeping, gating, and pulse generators; study of multivibrators, negative resistance devices and amplifiers, nonlinear operation of oscillators. Prerequisite: Electrical Engineering 122, 153; or equivalent. (1969-70 and alternate years: fall-day; 1970-71 and alternate years: fall-evening)

226 Optical Electronics (3)*(Formerly Engineering 218)*

Design of optical systems. Study of the primary aberrations, quantum theory of radiation, coherence, detection of radiation; with application to electron lenses, lasers, masers, infrared and ultraviolet devices, photo-

conductors and photodiodes. Prerequisite: Electrical Engineering 221 or equivalent. (1969-70 and alternate years: spring—day; 1970-71 and alternate years: spring—evening)

227 Industrial Electronics (3)

(Formerly Engineering 221)

Applications of electronic devices in industry; continuous and sampled control systems; induction and dielectric heating; timing and counting circuits; reliability and automatic checking equipment; digital control of machine tools. Prerequisite: Electrical Engineering 122 or equivalent and graduate status. (Fall—evening)

228 High-frequency Electronics (3)

(Formerly Engineering 220)

Analysis and design of electron-tube and solid-state devices used for the generation and amplification of UHF and higher-frequency signals. Prerequisite: Electrical Engineering 133 or equivalent. (Spring—evening)

230 Magnetohydrodynamics (3)

(Formerly Applied Science 242)

Study of the interaction of fluids with electromagnetic fields. Generalized Navier-Stokes and energy equations, magnetogasdynamic and magnetohydrodynamic approximations, boundary layer theory, statistical theory of turbulence, generalized Von Karman-Howarth equation, Boltzmann transport equation. MHD generators and devices. Prerequisite: Electrical Engineering 133 or equivalent. (Spring—evening)

231 Field Analysis and Potential Theory (3)

(Formerly Applied Science 263)

General study of the theory of potentials as used to facilitate solution of problems in electromagnetic theory, mechanics, thermodynamics, optics, and gravitation. Emphasis on mathematical methods such as Green's functions, variational methods, principal axis transformations, and multidimensional Fourier transforms. Prerequisite: Applied Science 211; Electrical Engineering 133 or equivalent. (1969-70 and alternate years: fall—day; 1970-71 and alternate years: fall—evening)

232 Electrodynamics (3)

(Formerly Applied Science 264)

Special theory of relativity and the Lorentz transformation; Minkowski's four-dimensional formulation; Maxwell's equations in four-dimensional tensor notation; relativistic Lagrangian and Hamiltonian for a particle; electromagnetic stress tensor; radiation by charges moving at relativistic speeds; Schroedinger and Dirac wave equations, including electromagnetic fields; introduction to quantum electrodynamics. Prerequisite: Applied Science 211; Electrical Engineering 133 or equivalent. (1969-70 and alternate years: spring—day; 1970-71 and alternate years: spring—evening)

233 Microwaves and Components (3)

(Formerly Engineering 233)

High-frequency transmission lines and guided systems; matching techniques; ferrite isolators, gyrators; Faraday rotation; microwave networks; directional couplers; cavity resonators and microwave components. Prerequisite: Electrical Engineering 133 or equivalent. (Fall—evening)

234 Electromagnetic Wave Propagation (3)*(Formerly Applied Science 266)*

Retarded time scalar, vector, and Hertz potential. Dipole and dipole array fields; Mie Theory of Electromagnetic Scattering by Spheres. Propagation in electrically and magnetically anisotropic media such as dielectric crystals, space charge plasmas, and ferrites. Wave propagation in inhomogeneous media; Liouville transformation, Lagrange's variation of parameters, WKB solution, invariant imbedding techniques. Propagation in stochastic and dispersive media. Prerequisite: Electrical Engineering 133 or equivalent. (1969-70 and alternate years: spring-evening; 1970-71 and alternate years: spring-day)

235 Antennas (3)*(Formerly Engineering 234)*

General solution of Maxwell's equations in terms of current sources, the far field approximations, radiation from current distributions, field equivalence theorems, the geometrical optics approximation, aperture antennas, receiving antennas, the theory of arrays, and applications to specific antennas and antenna types. Prerequisite: Electrical Engineering 133 or equivalent. (1969-70 and alternate years: fall-evening; 1970-71 and alternate years: fall-day)

241 Information Theory I (3)*(Formerly Applied Science 277)*

Laws and theorems of probability, statistical measure of uncertainty and information; noiseless coding, communication channels, channel capacity, fundamental theorems of information theory. Prerequisite: Electrical Engineering 142 or equivalent. (1969-70 and alternate years: fall-evening; 1970-71 and alternate years: fall-day; summer 1969)

242 Information Theory II (3)*(Formerly Applied Science 278)*

Error-correcting codes, parity-check coding, information sources, channels with memory, Markov Chains, continuous channels. Prerequisite: Electrical Engineering 241. (1969-70 and alternate years: spring-evening; 1970-71 and alternate years: spring-day; summer 1969)

243 Communication Theory I (3)*(Formerly Applied Science 273)*

Probability, random processes, correlation functions, and power spectra. Output distributions of linear and nonlinear devices with random inputs. Optimum receiver principle, vector channels, optimum receivers for binary and M-ary signals over white Gaussian channels and their error probabilities for different signal sets such as simplex and orthogonal signals. Prerequisite: Electrical Engineering 142. Prerequisite or concurrent registration: Applied Science 211. (1969-70 and alternate years: fall-day; 1970-71 and alternate years: fall-evening)

244 Communication Theory II (3)*(Formerly Applied Science 274)*

Schemes of efficient signaling for data sequences and their performance analysis. Channel models, filtering, and optimum modulation and demodulation. Signaling over fading channels and their optimum receivers. Diversity transmission and various reception schemes. Prerequisite: Electrical Engineering 243. (1969-70 and alternate years: spring-day; 1970-71 and alternate years: spring-evening)

246 Digital Communications (3)

Analog-to-digital conversion; the sampling theorem and its implications; applications of the Z-transform; optimum codes and optimum decoding schemes; generation of pseudorandom sequences; choice of optimum wave forms; decision theory and optimum detection schemes; sampled data systems; digital communication systems. Prerequisite: Electrical Engineering 241, 244; or equivalent. (Spring—evening)

247 Communication Systems (3)

(Formerly Engineering 235)

Wiener filters, phase-locked loops and their optimization. Parameter estimation theory with application to optimum demodulation of analog wave forms (DSB-AM, SSB-AM, FM). Comparative analysis of analog modulation systems. Digital communication systems—coherent and non-coherent reception of binary and M-ary signals and their performance analysis. Frequency acquisition and synchronization. Prerequisite: Electrical Engineering 243. (Fall—evening)

248 Microwave Communication Systems (3)

(Formerly Engineering 236)

Analysis and design of microwave communication systems with emphasis on radar, microwave relay, and satellite systems. Prerequisite: Electrical Engineering 133, 142; or equivalent. (Spring—evening)

250 Application of Numerical Methods (3)

Numerical methods in scientific and engineering problems; development of computer algorithms for the solution of numerical problems; error analysis and sensitivities of numerical methods; use of a procedural computer language in the solution of numerical methods; computer methods for simultaneous equations, interpolation, differentiation and quadrature. solution of ordinary differential equations, boundary value problems, partial differential equations, and linear algebra. Prerequisite: Electrical Engineering 51 or equivalent and permission of instructor. (Spring—evening)

251 Computing Systems (3)

(Formerly Engineering 232)

Organization of information processing systems. Interfacing problems, interrupt systems, A/D and D/A conversions, high-speed arithmetic units, random access and associative memories, man-machine communication problems. Time-sharing systems. Advances in computer hardware technology. Prerequisite: Electrical Engineering 154. (1969-70 and alternate years: fall—day; 1970-71 and alternate years: fall—evening)

253 Finite State Machines (3)

(Formerly Engineering 231)

Analysis and design of sequential networks, state diagrams, flow table, equivalence of states, races, transition maps, output tables, hazards, synchronous and asynchronous sequential networks. State assignment problem, partitions, partition pairs, information flow inequalities, clocks, state realizations, parallel and serial decompositions, machine networks and decompositions. State identification. Prerequisite: Electrical Engineering 153. (Fall—evening)

254 Finite Automata (3)*(Formerly Engineering 287)*

Effectively computable functions, recursive functions, regular expressions, single and multiple tape Turing machines, probabilistic automata, neural nets, reliability of automata, artificial intelligence, learning machines, threshold logic, adaptability, pushdown automata. Prerequisite: Electrical Engineering 251, 253. (Spring—evening)

255 Pattern Recognition, Graphics and Optical Processing (3)

Graphical data processing and display systems; software systems needed for graphical I/O; digital and analog display methods; scanning, sampling, digitizing, and transmission of data; holography, optical memories and systems; storage techniques and processing of images; concept analysis; linear and area transforms; geometry, topology, and syntax of pictures; picture enhancement; resolution analysis; signal-to-noise problems; transformations, projections, and the hidden-line problems. Prerequisite: Electrical Engineering 157 or equivalent and permission of instructor. (Fall—evening)

256 Analog and Hybrid Computers (3)*(Formerly Engineering 289)*

Analog computer components and electronics. Slow analog computer solutions of linear and nonlinear differential equations. System simulation and modeling on the analog computer. Introduction to the iterative analog computer. Transfer function simulation and use in control theory. The hybrid computer, digital logic and digital computer control. Digital-to-analog and analog-to-digital converters and interfaces. Optimization methods on a hybrid computer. Parameter variations and searching methods. Prerequisite or concurrent registration: Electrical Engineering 154 or permission of instructor. (1969-70 and alternate years: spring—day; 1970-71 and alternate years: spring—evening)

257 Digital Computer Programming Systems (3)*(Formerly Engineering 288)*

Introduction to the design of computer software and software systems. Design of assemblers and monitor systems. Communication between components of systems. Design of loaders, input-output control systems, and utility systems. Prerequisite: Electrical Engineering 157 or permission of instructor. (1969-70 and alternate years: fall—evening; 1970-71 and alternate years: fall—day)

258 Design of Compilers and High-level Languages (3)*(Formerly Engineering 290)*

Design of high-level, problem-oriented languages. Grammar, syntax, semantics, and pragmatics as they affect the design of translators and compilers. Context-free languages, pushdown lists, polish-string notation, and addition programming methods used in the construction of compilers and translators. Prerequisite: Electrical Engineering 257 or permission of instructor. (1969-70 and alternate years: spring—evening; 1970-71 and alternate years: spring—day)

271 Automatic Control in State Space Setting (3)*(Formerly Applied Science 201, Automatic Control Systems I)*

State space formulation of continuous systems, simulation diagrams, transfer function matrices, matrix representation of state equations, controllability and observability, the state transition matrix, stability analysis, methods

of Liapunov. Prerequisite: Electrical Engineering 172 or permission of instructor. (Fall—evening)

272 Digital Control Systems (3)

(Formerly Applied Science 202, Automatic Control Systems II)

Sampling processes and theorems; stability criteria, Z-transforms, modified Z-transforms, and responses of sampled-data systems; state variables for discrete systems; examples of practical digital computer control systems; synthesis and design of sampled-data control systems; nonlinear sampled-data control systems. Prerequisite: Electrical Engineering 271 or equivalent. (Spring—evening)

273 Optimal Programming and Control (3)

(Formerly Applied Science 203, Automatic Control Systems III)

Optimization theory. Calculus of variations; Euler's equation, fixed and variable end point conditions, boundary value problem, equality constraints, and Lagrange multipliers. Performance indices and penalty functions. The maximum principle and the Hamilton-Jacobi equation. Properties of optimal systems. Functional equations techniques of dynamic programming. Prerequisite: Electrical Engineering 271 or equivalent. (Fall—evening)

275 Stochastic Processes in Automatic Control (3)

Analysis of effects of time-invariant linear control systems on stationary random processes. The optimal filtering problem based on the maximum principle. Iterative parameter estimation using matrix inversion lemma. Analysis and control of multivariable systems in the presence of various disturbances. Stochastic stability. Statistical analysis of nonlinear systems—stationary and nonstationary states. Prerequisite: Electrical Engineering 271 or equivalent. (Fall—evening)

276 Cybernetics (3)

Principles of machines or mechanisms made by men or nature with regard to their ways and forms of possible behaviors: regular, determinate, or reproducible; fundamental concepts of finite differences; changes and transformations as sets of transitions, leading to stability and feedback; statistical concepts of complex systems and blackbox theory; Shannon's information theory; regulation and control of mechanisms. Prerequisite: graduate status and Engineering Administration 115 or equivalent. (Spring—evening)

277 Space Communication Systems (3)

(Formerly Engineering 243)

Theoretical and application aspects of space communications, as related to communication satellite systems, scientific satellites, manned space missions, and deep space missions. Prerequisite: graduate status. (Fall—evening)

278 Spacecraft Systems Design (3)

(Formerly Engineering 244)

Space environment; structure, propulsion, control, and instrumentation of spacecraft—launch, orbit, transit, and re-entry problems; bioastronautic considerations. Prerequisite: graduate status. (1969-70 and alternate years: spring—evening)

281 Electronic Measurements in Medicine (3)*(Formerly Engineering 222)*

Theory of measurements in biological areas, techniques for electronic measurements on biological specimens, current problems in medical metrology stressing electronic systems. Prerequisite: graduate status or permission of instructor. (Fall—evening)

282 Instrumentation in Medical Electronics (3)*(Formerly Engineering 223)*

Medical telemetry systems, medical use of the computer, engineering techniques in patient treatment, principles of good medical instrumentation. Prerequisite: graduate status or permission of instructor. (Spring—evening)

298 Research (arr.)

Research as arranged. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

299-300 Thesis Research (3-3)*(Academic year—as arranged; summer 1969)***319 Networks Research (arr.)**

Limited to students preparing for the Doctor of Science qualifying examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

329 Electronics Research (arr.)

Limited to students preparing for the Doctor of Science qualifying examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

339 Fields and Waves Research (arr.)

Limited to students preparing for the Doctor of Science qualifying examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

349 Communications Research (arr.)

Limited to students preparing for the Doctor of Science qualifying examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

359 Computer Science Research (arr.)

Limited to students preparing for the Doctor of Science qualifying examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

371 Simulation Methods for System Analysis (3)

Survey of simulation languages. Techniques of model building for material- and machine-based systems. Treatment of these systems with notion of transactions and states. Modeling the dynamic processes of growth problems. Analog, hybrid, and digital methods for simulation treated by means of case studies; speed and cost of alternate computing procedures. Project-type problems used to illustrate simulation methods. Prerequisite: Electrical Engineering 256 or permission of instructor. (Fall—evening)

372 Analysis and Control of Large Systems (3)

Systems as multistage decision processes. Analytical concepts of model making and matrix representation for computer mechanization. Recursive digital computer algorithm for economy in storage and computing time. System identification. Adaptive control systems. Prerequisite: Electrical Engineering 273 or equivalent. (Spring—evening)

379 Controls and Systems Research (arr.)

Limited to students preparing for the Doctor of Science qualifying examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

389 Medical Engineering Research (arr.)

Limited to students preparing for the Doctor of Science qualifying examination. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

399 Dissertation Research (arr.)

Limited to Doctor of Science candidates. May be repeated for credit. (Fall and spring—as arranged; summer 1969)

Engineering Administration*

Professors P.A. Crafton, H.E. Smith (*Chairman*), P.S. Shane, John Kaye, R.E. Cronin, Kenneth Johnson
Professorial Lecturer R.J. Wilson
Associate Professor Donald Gross
Associate Professorial Lecturers L.S. Rotolo, Victor Selman, R.W. Bublitz, D.H. Jermain, F.A. Miercort, R.M. Soland
Assistant Professor J.B. Smith, Jr.
Instructor C.E. Pinkus

FIELDS AND AREAS OF CONCENTRATION—GRADUATE**Computers in Management****Operations Research****Engineering Administration****Systems Analysis****Management of Research and Development****UNDERGRADUATE COURSES****115 Engineering Analysis (3)***(Formerly Applied Science 115)*

Solution of engineering problems using sets and functions; probability models; distributions and functions; statistical concepts and methods, including hypothesis testing, correlation, and regression. Prerequisite: Mathematics 24. (Fall and spring; summer 1969)

* Staff of Instruction for the academic year 1968-69.

140 Engineering Economics (3)*(Formerly Engineering 140)*

Theory and practice of engineering economics. Consideration of economic factors in engineering design decisions. Prerequisite: senior status. (Spring)

GRADUATE COURSES**204 Administration of Engineering Contracts (3)**

Study of the total contracting process, including initial budget preparation and justification, actions leading to the execution of a contract, and administration of the contract to completion; considered from the viewpoints of the industrial and government buyer and the seller of technical materials and services. (Fall and spring)

207 Personnel Administration (3)

Study of the functions of managing personnel, with emphasis on relationships within organizations which utilize the services of engineers and scientists; employment, management, development, wages and classification, union relations, safety, health and collateral benefits and services, human relations, personnel research in the field. (Fall and spring)

210 Engineering Law (3)

Legal principles and procedures of interest to engineers, the American Legal System, contracts and specifications, liability of professional engineers, antitrust problems, agency relationships, negotiable instruments, patent and proprietary rights, special problems in research and developmental contracts. (Fall and spring)

211-12 Engineering Administration I-II (3-3)

Comprehensive and systematic study of the administrative process with emphasis on industrial, scientific, and engineering environments. Planning: objectives, prediction, policies, plans and characteristics of plans. Organizing: theory of organization, structure, authority, specialization, delegation, staff and committees. Directing: leadership, managing human and material resources. Controlling: setting standards, evaluating performance, using system feedback data for correction and improvement. (Academic year; summer 1969—Engineering Administration 212)

253 Production Management (3)

Planning, organizing, and control of production; forecasting techniques; material management; methods of loading and scheduling production processes; electronic methods in production control. Organization and administration of the plant engineering function with emphasis on maintenance control programs. (Spring)

254 Automatic Data Processing Systems (3)

Logic of computers, arithmetic and control units, systems analysis for data processing applications, systems design, systems economics, relation to scientific decision processes. (Fall and spring)

255 Administration of Research and Development (3)

Study of contemporary practices of administrators of scientific and engineering research and development; the relation of these studies to accepted managerial concepts, and their effect on contemporary managerial

hierarchies and organizational structures. (Fall and spring; summer 1969)

261 Economic Analysis in Engineering Planning (3)

Important concepts and theories employed in economic analysis of engineering projects. Application of various analytical processes. Detailed practice in pursuit of solutions to, and adjustment of, persistent and current problems in this field. (Fall and spring)

269-70 Operations Research I-II (3-3)

Basic concepts and techniques of operations research as applied to problems in industrial, governmental, and military decision making. History and orientation of operations research; concept of quantitative decision making; decisions under certainty, risk and uncertainty; utility; allocation models. Game theory; queuing theory; inventory, sequencing, and replacement models; Monte Carlo, simulation, and gaming. Prerequisite: Engineering Administration 115 or equivalent. (Academic year; summer 1969—Engineering Administration 269)

272 Problems in Operations Research (3)

Field experience in operations research on a team basis. Each small group locates an actual problem and formulates solution by operations research models. Class evaluation of progress. (Spring)

273 Mathematical Methods for Operations Research (3)

Mathematical methods used in the operations research areas of mathematical programming; game, queuing, and inventory theory. Matrices and linear vector spaces, differential-difference equations, integral transforms, mathematical probability, stochastic processes. (Fall and spring)

275 Linear Programming (3)

Basic computational, theoretical, and applied areas with emphasis on the general linear programming problems; simplex procedures; duality problems; parametric linear programming and sensitivity analysis, transportation problem. (Fall and spring)

276 Theory of Games (3)

Study of mathematical models with applications to the relationships among independent competitive entities (persons or organizations in environment of competition, bargaining, bidding), selection of optimum strategies, minimax concept, connections with linear programming and decision functions, two-person and n-person zero and nonzero sum games. (Fall)

277 Queuing Theory (3)

Study and analysis of waiting line systems, birth and death processes, arrival and service patterns, single- and multi-channel systems, variations in queuing disciplines. (Spring)

278 Nonlinear and Dynamic Programming (3)

Static and dynamic optimization problems including convex, quadratic, and separable programs; network problems; problems in the calculus of variation. Gradient, Lagrangian, and penalty functions techniques. (Spring)

279 Inventory Control (3)

Application of mathematical techniques to decisions regarding when and how much to produce or purchase, control of production and inventory systems, various mathematical models of inventory systems with deterministic and stochastic demands, forecasting demand, interaction of production and inventory systems, simulation models. (Fall)

281-82 Systems Analysis and Management I-II (3-3)

Systems analysis as applied to management. Properties, nature, structure, and organization of systems; conceptualization of total system. Operational functioning and description of systems. Boundary and feedback concepts. Objectives of systems analysis, concept of planning, problem definition, choosing objectives for analysis. Relationship with other fields. Systems analysis as a methodology for exploring alternatives, assumptions, criteria, and risk. Decision making, measurement, and value theory in systems analysis. (Academic year)

283 Systems Engineering I (3)

(Formerly Engineering 260)

Concept of system structure and organization. Linear and nonlinear systems analysis, simulation and modeling; statistical and gaming methods in systems analysis. Introduction to optimization methods and flow graph theorems. (Fall)

284 Systems Engineering II (3)

(Formerly Engineering 261)

Design of systems, subsystems, and components. Dynamics and stability of systems; adaptive systems; system logic, tolerances, variations, and disturbances; signals and noise; system optimization. Prerequisite: Engineering Administration 283. (Spring)

285 Seminar: Administrative Problems (3)

Individual analysis of complex administrative problems, with group evaluation and discussion. Prerequisite: 18 semester hours of graduate credit. (Fall and spring)

293 Technical Enterprises (3)

Organization and launching of technology-based companies with emphasis on those for whom the Federal Government is the principal customer. Recruiting talent, establishing a viable base, planning the initial phases of operation and financing. Analysis of case studies and a detailed plan for a venture. (Fall)

294 Marketing of Technology (3)

Particular problems related to selling technical projects. Organization of the work and its performance, emphasis on marketing; proposal strategy, bidding reputation, competition, negotiation, the government's market. (Spring)

295 Management of Technical Information (3)

Needs and objectives of technical information systems, functions involved in technical information, storage and retrieval, abstracting, computer usage in technical information systems, system organization. (Spring)

296 Reliability Engineering (3)

Quantitative methods in the theory of reliability, mathematical models, design considerations, failure and repair rates, prediction models for non-maintained and maintained systems, trade-off factors, new developments in operations research applied to reliability. (Fall)

297 Problems in Engineering Administration (3)

Guided experience in analyzing, solving, and reporting on field problems in engineering administration. Prior to registration, the student must have identified a suitable problem, not necessarily related to the Master's thesis topic, on which he will work. (Fall)

298 Research (arr.)

Basic or applied research in engineering administration. May be repeated for credit. (Fall and spring; summer 1969)

299-300 Thesis Research (3-3)

(Academic year; summer 1969)

397 Advanced Topics in Operations Research (3)

Limited to students preparing for the Doctor of Science qualifying examination who have a major interest in operations research. Advanced topics from the literature of operations research for analysis, presentation, and discussion. Reading assignments from the professional journals selected by the instructor and the student. (Fall or spring)

398 Advanced Reading and Research (arr.)

Limited to students preparing for the Doctor of Science qualifying examination. May be repeated for credit. (Fall and spring; summer 1969)

399 Dissertation Research (arr.)

Limited to Doctor of Science candidates. May be repeated for credit. (Fall and spring; summer 1969)

Engineering Mechanics*

Professors C.H. Walther, M.A. Mason, G.M. Arkilic (*Chairman*), R.R. Fox, Alfred Freudenthal, S.W. Yuan (*Visiting*)
Adjunct Professors J.E. Duberg, I.E. Garrick
Professorial Lecturers Paul Zilcher, R.E. Fulton, Lewis Conta
Associate Professors John Eftis, B.I. Hyman, A.M. Kiper, T.G. Toridis
Associate Professorial Lecturers M.P. Gaus, Irving Korobkin, W.D. Erickson, R.W. Fralich, E.T. Kruszewski, Walter Olstad, M.J. Queijo, J.P. Raney, L.D. Staton, E.C. Yates, Jr., Shou-Ling Wang
Assistant Professors D.L. Jones, G.K. Lea
Assistant Professorial Lecturers F.J. Hughes, J.W. Cannon, Sr., R.W. Barnwell, J.D. Buckley, A.R. Saunders, L.H. Blakey

* Staff of Instruction for the academic year 1968-69.

UNDERGRADUATE FIELDS

Civil Engineering (see page 22).

Mechanical Engineering (see pages 26-27).

FIELDS AND AREAS OF CONCENTRATION—GRADUATE

Aerospace Engineering

Applied Science*

- | | | | |
|-----|--------------------------------|--------|-----------------------------|
| 225 | Mechanics of Space Flight | 245 | Advanced Propulsion Systems |
| 228 | Dynamic Stability of Airplanes | 255-56 | Aerothermochemistry I-II |

Engineering Mechanics

- | | | | |
|-----|--------------------------------------|---------|---------------------|
| 217 | Analytical Mechanics | 223 | Celestial Mechanics |
| 218 | Mechanics of Orbits and Trajectories | 298 | Research |
| 220 | Nonlinear Mechanics | 299-300 | Thesis Research |

Mechanical Engineering

- 216 Advanced Dynamics

Fluid Mechanics

Applied Science*

- 296 Kinetic Theory of Gases

Mechanical Engineering

- | | | | |
|-----|--------------------------------|---------|-------------------------------|
| 231 | Hydrodynamics | 298 | Research |
| 232 | Compressible Fluid-flow Theory | 299-300 | Thesis Research |
| 282 | Physical Gas Dynamics | 398 | Advanced Reading and Research |
| 285 | Reaction Kinetics | 399 | Dissertation Research |
| 286 | Laminar Viscous Flow | | |

Materials Science

Applied Science*

- | | | | |
|-----|---------------------------|-----|--|
| 216 | Solid State for Engineers | 241 | Quantum Mechanical Treatment of Metals |
| 235 | Physical Metallurgy | 248 | Physical Ceramics |

Engineering Mechanics

- | | | | |
|-----|------------------------|---------|-------------------------------|
| 230 | Science of Materials | 299-300 | Thesis Research |
| 238 | Theory of Dislocations | 398 | Advanced Reading and Research |
| 240 | Fracture Mechanics | 399 | Dissertation Research |
| 298 | Research | | |

* Offered only at NASA-Langley Research Center; may be offered on campus when arranged.

Soil Mechanics and Foundation Engineering**Civil Engineering**

| | | | |
|-----|----------------------------------|---------|-------------------------------|
| 204 | Geotechnics in Soil Mechanics | 298 | Research |
| 205 | Theoretical Soil Mechanics | 299-300 | Thesis Research |
| 206 | Foundation Engineering | 398 | Advanced Reading and Research |
| 207 | Special Topics in Soil Mechanics | 399 | Dissertation Research |

Solid Mechanics**Engineering Mechanics**

| | | | |
|--------|---|---------|-------------------------------|
| 219 | Mechanics of Continua | 260 | Theory of Plates and Shells |
| 221-22 | Theory of Elasticity I, II | 261 | Theory of Plasticity |
| 236 | Wave Propagation in Solids | 298 | Research |
| 256 | Introduction to the Theories of Inelastic Media | 299-300 | Thesis Research |
| 259 | Nonlinear Mechanics of Continua | 398 | Advanced Reading and Research |
| | | 399 | Dissertation Research |

Structural Engineering**Civil Engineering**

| | | | |
|-----|---|---------|--------------------------------------|
| 201 | Metal Structures | 255 | Analysis of Plate Structures |
| 202 | Ultimate Strength of Reinforced Concrete Structures | 256 | Analysis of Shell Structures |
| 203 | Prestressed Concrete Structures | 260 | Elements of Structural Reliability |
| 210 | Analysis of Structures | 263-64 | Theory of Structural Stability I, II |
| 211 | Experimental Structural Analysis | 298 | Research |
| 212 | Concepts of Structural Design | 299-300 | Thesis Research |
| 213 | Structural Design for Dynamic Loads | 398 | Advanced Reading and Research |
| 252 | Structural Dynamics | 399 | Dissertation Research |
| 254 | Special Topics in Structural Mechanics | | |

Thermal Sciences**Mechanical Engineering**

| | | | |
|--------|-------------------------------|---------|--|
| 280 | Advanced Thermodynamics | 296 | Special Topics in Heat and Mass Transfer |
| 281 | Nonequilibrium Thermodynamics | 298 | Research |
| 284 | Combustion Processes | 299-300 | Thesis Research |
| 291-92 | Energy Conversion I-II | 398 | Advanced Reading and Research |
| 293-94 | Heat Transfer I-II | 399 | Dissertation Research |
| 295 | Statistical Thermodynamics | | |

ENGINEERING MECHANICS

GRADUATE COURSES

217 Analytical Mechanics (3)*(Formerly Applied Science 217)*

Fundamental principles, generalized coordinates, variational principles and Lagrange's equations, nonholonomic systems, Hamilton's equations, theory of small oscillations. Prerequisite or concurrent registration: Applied Science 211. (Spring)

218 Mechanics of Orbits and Trajectories (3)

Celestial mechanics; orbits and trajectories in force fields. Dynamics of space vehicles. Prerequisite: Engineering Mechanics 217 or Physics 232. (1969-70 and alternate years: fall)

219 Mechanics of Continua (3)*(Formerly Applied Science 219)*

Introduction to the fundamentals of continuous media; applications taken from small deformation theories of ideal elastic, perfectly plastic, viscoplastic, and viscoelastic solids, and from ideal and viscous fluids. Prerequisite: graduate status. (Fall)

220 Nonlinear Mechanics (3)*(Formerly Applied Science 220)*

Topological and analytical methods in nonlinear mechanics, nonlinear resonance, relaxation oscillations. Prerequisite: Engineering Mechanics 217. (Not offered 1969-70)

221 Theory of Elasticity I (3)*(Formerly Applied Science 221)*

Theory of finite elastic deformation, specialization to the classical linear theory, torsion, plane problems in elasto-statics using stress function and Fourier transform techniques. Prerequisite: Applied Science 212 or approval of Department. (Spring)

222 Theory of Elasticity II (3)*(Formerly Applied Science 222)*

Plane problems in elasto-statics using complex variable methods, introduction to three-dimensional elasto-statics and thermoelasticity, variational principles. Prerequisite: Applied Science 211, Engineering Mechanics 221, or approval of Department. (1969-70 and alternate years: fall)

223 Celestial Mechanics (3)*(Formerly Applied Science 223)*

General equations of motion, Lagrange's planetary equations, disturbing function, Delaunay and Poincaré variables, secular inequalities, lunar theory, precession and nutation. Prerequisite: Engineering Mechanics 217. (Not offered 1969-70)

230 Science of Materials (3)*(Formerly Engineering 230)*

Structure as related to physical properties. Strengthening mechanisms in solids. Experimental procedures in X-ray diffraction, microradiography,

and transmission electron microscopy. Lecture and laboratory. Prerequisite: graduate status. (1969-70 and alternate years: fall)

236 Wave Propagation in Solids (3)

Small amplitude plane and spherical wave propagation in unbounded elastic media; dilational, shear, and surface waves; reflection and refraction of plane waves; free waves in finite bodies. Prerequisite: Engineering Mechanics 221 or approval of Department. (Not offered 1969-70)

238 Theory of Dislocations (3)

(Formerly Applied Science 238)

Definitions and general properties of dislocations, introduction to non-Riemannian theory of continuous distributions of dislocations, physical interpretations of nonholonomic objects, applications. Prerequisite: Applied Science 212, Engineering Mechanics 230. (1969-70 and alternate years: spring)

240 Fracture Mechanics (3)

Fundamentals of brittle fracture, Griffith theory and extensions, mechanics of fracture, linear elastic systems, plasticity considerations, fracture toughness, engineering analysis, notch strength analysis with limit approach, crack propagation laws, fatigue, fracture testing, comparison of recent continuum theories. Prerequisite: Engineering Mechanics 219 or approval of Department. (Spring)

256 Introduction to the Theories of Inelastic Media (3)

Physical basis of anelasticity, viscoelasticity, plasticity, and viscoplasticity; constitutive equations of elastic and viscoelastic media; foundations of the theories of plasticity and viscoplasticity; one- and two-dimensional boundary value problems in linear-visco-elastic and elastic-plastic media; the rigid-plastic medium; simple problems in nonlinear viscous and viscoplastic media; wave propagation in inelastic media. Prerequisite: Engineering Mechanics 219. (Fall)

259 Nonlinear Mechanics of Continua (3)

(Formerly Applied Science 259)

Development of fundamental concepts of nonlinear media and their applications. Prerequisite: Applied Science 212 and Engineering Mechanics 219, or Engineering Mechanics 221. (1969-70 and alternate years: spring)

260 Theory of Plates and Shells (3)

(Formerly Applied Science 260)

Theories of finite deformations of plates, complex variable methods, Reissner's theory of bending of isotropic plates, general bending theory of shells, theory of shallow shells, boundary value problems. Prerequisite: Engineering Mechanics 221. (Not offered 1969-70)

261 Theory of Plasticity (3)

(Formerly Applied Science 261)

Introduction to mathematical theory of plasticity; tensor invariants, theory of conditions of compatibility, constitutive equations, characteristic surfaces for perfectly plastic solids; applications. Prerequisite: Applied Science 212 and Engineering Mechanics 219, or Engineering Mechanics 221. (1970-71 and alternate years: spring)

298 Research (arr.)

Basic research projects as arranged. May be repeated for credit. (Fall and spring; summer 1969)

299-300 Thesis Research (3-3)

(Academic year; summer 1969)

398 Advanced Reading and Research (arr.)

Limited to students preparing for the Doctor of Science qualifying examination. May be repeated for credit. (Fall and spring; summer 1969)

399 Dissertation Research (arr.)

Limited to Doctor of Science candidates. May be repeated for credit. (Fall and spring; summer 1969)

AEROSPACE ENGINEERING**GRADUATE COURSES**

(See Applied Science courses numbered 211 through 296, page 78.)

CIVIL ENGINEERING**UNDERGRADUATE COURSES****121-22 Structural Theory I-II (3-3)**

(Formerly Applied Science 121-22)

Theory of determinate and indeterminate structures using both classical and modern approaches. Prerequisite: Applied Science 60. (Academic year)

140 Materials Science (3)

(Formerly Applied Science 101)

Interatomic and intermolecular forces; elements of atomic and molecular structure; elastic and thermal properties, the defect lattice, plastic deformation, metals, ceramics, polymers, phase equilibrium, reaction kinetics, electron structure, electric and magnetic properties. Prerequisite: Applied Science 60, 114, and Mechanical Engineering 131. (Spring)

161 Earth Science (3)

(Formerly Applied Science 70)

Formation and properties of soils and rocks, climatology, hydrology, groundwater and river flow, seismology. Prerequisite: Applied Science 60, Mechanical Engineering 126. (Fall)

163 Environmental Engineering (3)

(Formerly Engineering 144)

Water and waste water collection and treatment, pollution and pollution prevention, radiation and other environmental problems. Prerequisite: senior status. (Spring)

165 Materials Engineering (3)

(Formerly Engineering 113)

Engineering properties of materials; elements of materials testing; effect of microstructure on the deformational response of metals, polymers, and

ceramics; polyphase materials and composites; deformation under very low and very high rates of strain; fracture phenomena, the cyclic state, fatigue, temperature effects, stability of mechanical properties, aspects of materials' evaluation. Prerequisite: Applied Science 60. (Fall)

168 Soil Mechanics (3)

(Formerly Applied Science 62)

Analysis of lateral earth pressures, bearing capacity, foundations, and slope stability, plus design problems involving the engineering properties of soils. Prerequisite: Civil Engineering 161. (Spring)

170 Hydraulic Engineering (3)

(Formerly Engineering 10)

Hydraulic system design including pipe networks, river and channel flow, drainage and irrigation, water supply, and sewerage. Prerequisite: Civil Engineering 161. (Spring)

183 Urban Planning (3)

(Formerly Engineering 141)

Engineering aspects of urban planning, including transportation, water supply and sewerage, public utilities, safety and convenience, and natural environment. Prerequisite: senior status. (Fall)

191-92 Structural Design I-II (3-3)

(Formerly Engineering 11-12)

Concepts of structural design, elastic and plastic design of metal structures, elastic design and ultimate strength design of reinforced and prestressed concrete structures, individual design problems. Prerequisite: Civil Engineering 122, 165. (Academic year)

194 Design Projects (3)

(Formerly Engineering 142)

Selected problems of current importance to be solved by teams applying planning, analysis and synthesis, and optimization techniques. Prerequisite: senior status. (Spring)

198 Research (1 to 3)

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring)

GRADUATE COURSES

201 Metal Structures (3)

(Formerly Engineering 201)

Structural behavior and failure of metal structures, materials, residual stresses, analysis and design of connections and members, theory of plastic collapse of structures, plastic design. (1969-70 and alternate years: fall)

202 Ultimate Strength of Reinforced Concrete Structures (3)

(Formerly Engineering 202)

Modes of failure of reinforced concrete structures; experimental data on failure; ultimate strength concepts for the analysis of beams, slabs, and columns. (Not offered 1969-70)

203 Prestressed Concrete Structures (3)*(Formerly Engineering 203)*

Structural behavior and failure of prestressed concrete structures; materials; theory, analysis, and design of prestressed concrete structures and members. (Not offered 1969-70)

204 Geotechnics in Soil Mechanics (3)*(Formerly Engineering 204)*

Dynamic geology in the formation and properties of soils; Boussinesq and Westergaard equations for stresses and deformations in soil masses; analysis of settlement; flow of water in soils; solutions of Laplace-type equations for seepage involving foundations, earth dams, and wells; theory of frost action. Prerequisite: graduate status. (1969-70 and alternate years: fall)

205 Theoretical Soil Mechanics (3)*(Formerly Engineering 205)*

Theories of soil strength and conditions for failure, bearing capacity of footings, pile foundations, theories of lateral earth pressure, stability of slopes, soil dynamics. Prerequisite: graduate status. (1969-70 and alternate years: spring)

206 Foundation Engineering (3)*(Formerly Engineering 206)*

Principles of soil mechanics and structural mechanics in the analysis and design of spread footings, mat and pile foundations, retaining walls, sheet piling, and water front structures. Prerequisite: graduate status. (Not offered 1969-70)

207 Special Topics in Soil Mechanics (3)

Soil rheology, dynamics of foundations, computer applications, lunar soil mechanics, excavation with nuclear explosives, and sampling and testing of ocean bottom sediments. Prerequisite: approval of Department. (Not offered 1969-70)

210 Analysis of Structures (3)*(Formerly Engineering 250)*

Classical and modern methods of analysis of statically indeterminate structures, including matrix analysis, variational methods, theory of plastic collapse. Prerequisite: graduate status. (Fall)

211 Experimental Structural Analysis (3)*(Formerly Engineering 211)*

Experimental analysis of trusses, rigid frames, and plate and shell structures; large- and small-deflection models, similitude. Prerequisite: Civil Engineering 210. (1969-70 and alternate years: spring)

212 Concepts of Structural Design (3)*(Formerly Engineering 212)*

Advanced seminar relating theoretical and experimental knowledge to the problems of function, form, mechanical behavior, failure, and analysis of structures. Prerequisite: Civil Engineering 201, 202, or 203; and 210. (1969-70 and alternate years: fall)

213 Structural Design for Dynamic Loads (3)

Analysis and design of structures for wind loads, earthquake, and blast loads; design of structural elements in concrete and steel; details of connections; discussions of applicable building codes as well as current literature. Prerequisite: approval of Department. (1969-70 and alternate years: spring)

252 Structural Dynamics (3)
(Formerly Engineering 252)

Analysis of elastic structures under various dynamic loadings, both steady-state and transient; including vibrations of rigid frames, plates, and thin shells. Prerequisite: approval of Department. (Not offered 1969-70)

254 Special Topics in Structural Mechanics (3)
(Formerly Applied Science 254)

Selected problems in structural mechanics, including finite element techniques, thermal stresses in one- and two-dimensional structures, impact of elastic bodies, and other current topics of interest. Prerequisite: Civil Engineering 210 or approval of Department. (Not offered 1969-70)

255 Analysis of Plate Structures (3)
(Formerly Engineering 255)

Bending and stretching of thin elastic plates under lateral and in plane loading with various boundary conditions, continuous plates and plates on elastic foundations, buckling of plates, theory of folded plate structure. Prerequisite: graduate status. (Spring)

256 Analysis of Shell Structures (3)
(Formerly Engineering 256)

Theory of curved surfaces; general membrane theory, bending theory for shells of revolution; applications to specific shapes and loadings, pressure vessels, domes; buckling of shells. Prerequisite: graduate status. (Fall)

260 Elements of Structural Reliability (3)

Aspects of probabilistic structural analysis, safety and the probability of structural failure, reliability, probability distributions of physical relevance, statistics of extremes, safety and reliability under conditions of fatigue and creep, structural response to stochastic forces, dynamic excitation, decision rules for optimal design, coastal engineering applications. Prerequisite: approval of Department. (Spring)

263 Theory of Structural Stability I (3)
(Formerly Applied Science 262)

General criteria for stability; buckling of elastic, plastic, and viscoelastic columns and frames; torsional and lateral buckling; variational and numerical methods. Prerequisite: graduate status. (Not offered 1969-70)

264 Theory of Structural Stability II (3)

Buckling and postbuckling behavior of plates and shells under static and dynamic loads; aeroelastic instability. Prerequisite: Civil Engineering 255, 256, or 263. (1969-70 and alternate years: spring)

275 Special Topics in Ocean Engineering (3)

Selected problems of current interest in ocean engineering, such as materials and design criteria for hydrospace structures, dynamics of currents

and waves, anchors and foundations of the ocean bottom, and life support equipment. (Spring)

298 Research (arr.)

Basic research projects, as arranged. May be repeated for credit. (Fall and spring; summer 1969)

299-300 Thesis Research (3-3)

(Academic year; summer 1969)

398 Advanced Reading and Research (arr.)

Limited to students preparing for the Doctor of Science qualifying examination. May be repeated for credit. (Fall and spring; summer 1969)

399 Dissertation Research (arr.)

Limited to Doctor of Science candidates. May be repeated for credit. (Fall and spring; summer 1969)

MECHANICAL ENGINEERING

UNDERGRADUATE COURSES

126 Fluid Mechanics (3)

(Formerly Applied Science 63)

Basic laws of incompressible fluid flow and their application; introduction to boundary layer theory. Prerequisite: Applied Science 59. (Spring)

131 Thermodynamics (3)

(Formerly Applied Science 85)

Fundamental thermodynamic concepts from classical and statistical viewpoints; thermal equilibrium and temperature; the first law of thermodynamics, energy analysis of thermodynamic systems. Approach to equilibrium, entropy and the second law of thermodynamics, analysis of thermodynamic systems. Prerequisite or concurrent registration: Applied Science 59. (Fall; summer 1969)

134 Dynamics of Linear Systems (3)

(Formerly Applied Science 65)

Vibration of single- and multiple-degree of freedom linear systems, transient and steady-state analysis, vibration of distributed parameter systems, and solution by numerical methods. Prerequisite: Applied Science 59, 114. (Spring)

148 Thermodynamic Analysis (3)

(Formerly Engineering 31 Thermal Power)

Application of thermodynamics to engineering systems, irreversibility and availability, thermodynamic potentials and criteria of equilibrium. Analysis of thermodynamic cycles; power and refrigeration cycles, air-standard cycles; nonreactive gas mixtures; thermodynamics of reactive mixtures. Prerequisite: Mechanical Engineering 131. (Spring)

152 Mechanical Engineering Laboratory (3)

(Formerly Engineering 111)

Experimental analysis of mechanical, fluid, thermal, thermomechanical, and electromechanical devices. Prerequisite: senior status. (Spring)

155 Compressible Fluid Flow (3)*(Formerly Applied Science 64)*

Basic laws of compressible fluid flow, with application to nozzles, pipe flow, and fluid machinery; introduction to thin airfoil theory. Prerequisite: Mechanical Engineering 126, 131. (Fall)

161 Advanced Dynamics (3)*(Formerly Applied Science 66)*

Lagrangian and Hamiltonian formulations of mechanics; central force motion, rigid body dynamics, and small oscillations; introduction to gyro dynamics. Prerequisite: Mechanical Engineering 134. (Fall)

171-72 Mechanics of Deformable Solids I-II (3-3)*(Formerly Applied Science 71-72)*

Introduction to the theories of elasticity, plasticity, and viscoelasticity; applications in solid mechanics. Prerequisite: Applied Science 60. (Academic year)

187 Heat Transfer Theory (3)*(Formerly Applied Science 87)*

Steady- and unsteady-state heat conduction; analytical, analog, and numerical solutions. Convective heat transfer, boundary layer approach, analogy between heat and momentum transfer; thermal radiation, heat transfer by radiation between surfaces; design and selection of heat exchangers. Prerequisite: Applied Science 114, Mechanical Engineering 126. (Fall)

191-92 Mechanical Design I-II (3-3)*(Formerly Engineering 131-32)*

Design of machine elements and systems, including shafts, beams, springs, clutches, brakes, gears; machines as systems of element. Prerequisite: senior status. (Academic year)

194 Energy Conversion (3)*(Formerly Engineering 86)*

Principles of steady-state energy conversion; basic ideas of quantum physics and introduction to semiconductors; analyses of thermoelectric, photovoltaic, thermionic, and magnetohydrodynamic generators and fuel cells. Prerequisite: Electrical Engineering 20, Mechanical Engineering 148. (Spring)

198 Research (1 to 3)

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring)

GRADUATE COURSES**216 Advanced Dynamics (3)***(Formerly Engineering 216)*

Dynamics of continuous mechanical systems; Lagrange's equations, Hamilton's principle, gyro dynamics; operational methods. Prerequisite: graduate status. (Fall)

231 Hydrodynamics (3)*(Formerly Applied Science 231)*

Methods for solution of hydrodynamic problems involving incompressible inviscid fluid flow; general equations of inviscid fluid flow, fluid deformation. Prerequisite: Applied Science 211. (Spring)

232 Compressible Fluid-flow Theory (3)*(Formerly Applied Science 232)*

Conservation laws, flow discontinuities, exact solutions, and linearized theory; applications of the hodograph method, unsteady flows, and self-similar solutions; introduction to inviscid hypersonic flow. Prerequisite: Mechanical Engineering 231. (Fall)

280 Advanced Thermodynamics (3)*(Formerly Applied Science 280 Classical Thermodynamics)*

Statistical significance of the entropy concept, conditions of equilibrium, equilibrium of heterogeneous systems. Application of thermodynamic formalism to magnetic, electric, and solid systems; equilibrium of ionized gases; the Nernst postulate and the third law of thermodynamics. Prerequisite: graduate status. (Fall)

281 Nonequilibrium Thermodynamics (3)

Limitations of equilibrium thermodynamics, entropy production, phenomenological equations and linear laws; postulates of nonequilibrium thermodynamics, formulation of the equations of nonequilibrium systems, statistical foundations, stationary nonequilibrium states; selected applications. Prerequisite: Mechanical Engineering 280. (1970-71 and alternate years: spring)

282 Physical Gas Dynamics (3)*(Formerly Applied Science 282 Real Gas Dynamics)*

Introduction to real gas effects; dissociation, ionization, and radiative heat transfer. Prerequisite: Mechanical Engineering 232. (1969-70 and alternate years: spring)

284 Combustion Processes (3)*(Formerly Engineering 284)*

Thermodynamics of combustion, chemical kinetics, flame propagation, combustion of liquids and solids, detonation processes. Prerequisite: Mechanical Engineering 280. (Not offered 1969-70)

285 Reaction Kinetics (3)*(Formerly Applied Science 285)*

Theoretical aspects of kinetics of homogeneous and heterogeneous reactions in gaseous and liquid systems. Prerequisite: Mechanical Engineering 280. (Not offered 1969-70)

286 Laminar Viscous Flow (3)*(Formerly Engineering 286)*

The Navier-Stokes equations, asymptotic solutions to flow at low and high Reynolds numbers; solution to boundary layer equations; study of viscous shock structure. Prerequisite: Mechanical Engineering 231 or 232. (Fall)

291-92 Energy Conversion I-II (3-3)*(Formerly Engineering 291-92)*

Thermodynamics of energy conversion, duality of matter, semiconductor theory, thermoelectric engines, thermionic converters; magnetohydrodynamic engines, junction diodes, photovoltaic effects, solar cells, free energy fuel cells, conditions of equilibrium, construction of fuel cells. Prerequisite: graduate status. (First half: spring. Second half: not offered 1969-70.)

293-94 Heat Transfer I-II (3-3)*(Formerly Engineering 293-94)*

Conduction of heat through solid, liquid, and gaseous media; formulation and methods of analytical, numerical, and analog solutions; convective heat and mass transfer; similarity solutions, boundary layer approach, heat and momentum transfer analogy methods; thermal radiation; radiant interchange in both nonparticipating and participating media. Prerequisite: Applied Science 211. (First half: not offered 1969-70. Second half: fall.)

295 Statistical Thermodynamics (3)*(Formerly Applied Science 295)*

Distribution functions; Boltzmann, Bose-Einstein, and Fermi-Dirac statistics; partition functions, correspondence between classical and statistical thermodynamics. Systems with negligible effects of interparticle forces: perfect gases, perfect electron gas, photon gas. The Debye solid, the Einstein solid. Prerequisite: Mechanical Engineering 280. (1969-70 and alternate years: spring)

296 Special Topics in Heat and Mass Transfer (3)

Selected heat and mass transfer problems of current interest such as temperature distribution and heat transfer rate in an ablating solid; heat transfer with boiling, two-phase flow in pipes, heat transfer to liquid metals, thermal contact resistance, heat transfer to non-Newtonian fluids. Prerequisite: Mechanical Engineering 294. (Spring)

297 Special Topics in Fluid Mechanics (3)

Selected topics in fluid mechanics of current interest, such as rarefied flow, hypersonic leading edge flow, method of series truncation, nonequilibrium wave propagation. Prerequisite: approval of Department. (Fall)

298 Research (arr.)

Research as arranged. May be repeated for credit. (Fall and spring; summer 1969)

299-300 Thesis Research (3-3)*(Academic year; summer 1969)***398 Advanced Reading and Research (arr.)**

Limited to students preparing for the Doctor of Science qualifying examination. May be repeated for credit. (Fall and spring; summer 1969)

399 Dissertation Research (arr.)

Limited to Doctor of Science candidates. May be repeated for credit. (Fall and spring; summer 1969)

Measurement Science*

Professors Louis de Pian (*Acting Director*), T.J. Carroll (*Research*)
Adjunct Professors L.A. Guildner, A.G. McNish, T.R. Young, F.K. Harris,
D.P. Johnson
Professorial Lecturers Leon Horn, F.E. Washer

UNDERGRADUATE FIELD

Measurement Science (see page 25).

SUBJECT AREAS—UNDERGRADUATE

General Measurement Science

101-2 Measurement Science I-II

Instrumentation

111 Introductory Instrumentation 112 Instrumentation

Specific Measurements

121 Mechanical Measurement 123 Pressure Measurement
122 Heat Measurement

Laboratory

131 Measurement Laboratory 132 Measurement Projects
Laboratory

FIELDS AND AREAS OF CONCENTRATION—GRADUATE

General Measurement Science

201 Advanced General Metrology 203-4 Probability and Statistics of
Metrology I-II

Precise Measurements

242 Precise Microwave 243 Precise Optical Measurements
Measurements 244 Precise Electrical Standards

UNDERGRADUATE COURSES

101-2 Measurement Science I-II (3-3)
(Formerly Applied Science 105-6)

Fundamental concepts in measurement science; standards, error, accuracy, precision, measurement, and comparability. Design of experiments. Prerequisite: senior status. (Academic year—evening)

111 Introductory Instrumentation (3)
(Formerly Engineering 52)

Theory, design, and application of simple transducers; design of instrumentation of one-type systems; analysis and design of simple instrumentation. Prerequisite: Electrical Engineering 20. May be taken for graduate credit. (Fall—evening)

* Staff of Instruction for the academic year 1968-69.

112 Instrumentation (3)*(Formerly Engineering 53)*

Analysis and design of transducers and instrumentation for measurement in systems containing multiple quantities of one type or mixtures of types. Prerequisite: Measurement Science 111. May be taken for graduate credit. (Spring—evening)

121 Mechanical Measurement (3)*(Formerly Engineering 54)*

Precise measurements of mass and length; mechanical and interferometric methods. Prerequisite: senior status. May be taken for graduate credit. (Fall—evening)

122 Heat Measurement (3)*(Formerly Engineering 55)*

Temperature scales; measurement by resistance thermometry, thermocouples, pyrometry, vapor pressure thermometry; heat transfer quantities and their measurement; calorimeters, flow calorimeters. Prerequisite: senior status. May be taken for graduate credit. (Fall—evening)

123 Pressure Measurement (3)*(Formerly Engineering 56)*

Experimental techniques for quantitative measurement of pressure; working gages, standards, calibration procedures; methods and apparatus for observations near atmospheric pressure, in the high pressure range, and in the vacuum range. Prerequisite: senior status. May be taken for graduate credit. (Spring—evening)

131 Measurement Laboratory (3)*(Formerly Engineering 101)*

Design of test and test measurement of various electrical, mechanical, and heat quantities in simple and complex systems. Data treatment and reporting of results. Introduction to quality control operations. Prerequisite: Engineering Administration 115. Prerequisite or concurrent registration: Measurement Science 101. (Fall—evening)

132 Measurement Projects Laboratory (3)*(Formerly Engineering 102)*

Individual selected measurement problems of some complexity. Prerequisite: Measurement Science 131. Prerequisite or concurrent registration: Measurement Science 102. (Spring—evening)

198 Research (1 to 3)

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring)

GRADUATE COURSES**201 Advanced General Metrology (3)***(Formerly Engineering 270)*

Topics in the conceptual, physical, and mathematical aspects of measurement, standards, design for precision measurement, and measurement at extreme values. Prerequisite: graduate status. (Fall—evening)

203-4 Probability and Statistics of Metrology I-II (3-3)*(Formerly Engineering 271-72)*

Probability distributions, discrete and continuous distributions; sampling; combinatorial analysis; stochastic processes; conditional probability; correlation; analysis of variance; design and analysis of experiments, Latin Square experiments, factorial experiments, block and lattice design. Prerequisite: Engineering Administration 115 or equivalent. (Academic year—evening)

242 Precise Microwave Measurements (3)*(Formerly Engineering 273)*

Precise measurement of power, frequency, impedance, wavelength, and attenuation at microwave frequencies; characteristics and Q of resonant devices; calibration of microwave components; design of microwave experiments. Prerequisite: Electrical Engineering 133 or equivalent. (Spring—evening)

243 Precise Optical Measurements (3)*(Formerly Engineering 274)*

Optical constants of lens systems; aberration; resolving power; illumination in focal plane; image evaluation, magnification, index of refraction; color and color temperature. Prerequisite: graduate status. (Fall—evening)

244 Precise Electrical Standards (3)*(Formerly Engineering 275)*

Concepts of standards, errors; design of resistance, capacitance and inductance standards; d-c voltage standards; frequency and time standards; dielectric and magnetic materials, attenuation standards, power standards, transfer standards. Prerequisite: Electrical Engineering 160 or equivalent. (Spring—evening)

298 Research (arr.)

Research as arranged. May be repeated for credit. (Fall and spring; summer 1969)

299-300 Thesis Research (3-3)*(Academic year; summer 1969)***398 Advanced Reading and Research (arr.)**

Limited to students preparing for the Doctor of Science qualifying examination. May be repeated for credit. (Fall and spring; summer 1969)

399 Dissertation Research (arr.)

Limited to Doctor of Science candidates. May be repeated for credit. (Fall and spring; summer 1969)

FACULTY AND STAFF OF INSTRUCTION*

EMERITUS

Benjamin Carpenter Cruickshanks, *Professor Emeritus of Mechanical Engineering*
B.S. in M.E. 1920, George Washington University

ACTIVE

Melvin Dayne Aldrich, *Assistant Professorial Lecturer in Engineering*
B.S. 1963, West Virginia University; M.S. 1965, D.Sc. 1968, University of Virginia

Galip Mehmet Arkilic, *Professor of Applied Science*
B.M.E. 1946, Cornell University; M.S. 1947, Illinois Institute of Technology; Ph.D. 1954, Northwestern University

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B.E.E. 1960, M.S. in Engr. 1964, George Washington University

Constantine Balanis, *Assistant Professorial Lecturer in Engineering*
B.S. in E.E. 1964, Virginia Polytechnic Institute; M.E.E. 1966, University of Virginia

Richard Walker Barnwell, *Assistant Professorial Lecturer in Engineering*
B.S. 1961, M.S. 1962, Auburn University; Ph.D. 1968, Virginia Polytechnic Institute

Lewis Horrigan Blakey, *Assistant Professorial Lecturer in Engineering*
B.S. in C.E. 1954, University of Notre Dame; M.S. in Engr. 1962, George Washington University

Matthew Edward Brady, *Associate Professorial Lecturer in Engineering*
B.S. in E.E. 1945, University of Nebraska; M.Engr. 1959, University of California, Los Angeles

Edward Howard Braun, *Associate Professor of Engineering and Applied Science*
B.A. 1948, M.A. 1950, Columbia University

Miles Melvin Bruce, *Assistant Professorial Lecturer in Engineering*
B.S. 1962, Clemson University; M.S. 1965, University of Virginia

* Professors, Adjunct Professors, Associate Professors, Assistant Professors, and Instructors constitute the Faculty. The President of the University, the Vice President for Academic Affairs, the Registrar of the University, and the Director of Admissions of the University are ex officio members of the Faculty. This listing of the Faculty and Staff of Instruction is for the academic year 1968-69.

- Robert Wayne Bublitz, *Associate Professorial Lecturer in Engineering*
B.S. 1962, M.S. 1963, Oklahoma State University of Agriculture and Applied Science
- John Dennis Buckley, *Assistant Professorial Lecturer in Engineering*
B.S. 1950, St. Lawrence University; B.S. 1959, M.S. 1961, Clemson University; Ph.D. 1968, Iowa State University of Science and Technology
- John Andrew Cannon, Sr., *Assistant Professorial Lecturer in Engineering*
B.M.E. 1958, M.E.A. 1964, George Washington University
- Thomas Joseph Carroll, *Research Professor of Applied Science*
B.A. 1932, University of Pittsburgh, Ph.D. 1936, Yale University
- William Harold Carter, *Assistant Professorial Lecturer in Engineering*
B.S. in E.E. 1962, M.S. in E.E. 1963, Ph.D. 1966, University of Texas
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- Pi-Fuay Chen, *Assistant Professor of Engineering*
B.S. 1956, Taipei Institute of Technology, Taiwan; M.S. 1962, Virginia Polytechnic Institute
- Lewis Conta, *Professorial Lecturer in Engineering*
B.S. 1934, M.S. 1935, University of Rochester; Ph.D. 1942, Cornell University
- James Kyle Cooper, *Assistant Professorial Lecturer in Engineering*
B.A. 1958, University of Kentucky; M.D. 1962, Vanderbilt University
- Paul Arthur Crafton, *Professor of Engineering and Applied Science*
B.M.E. 1944, City College, New York; M.S. 1950, Ph.D. 1956, University of Maryland
- Robert Emmet Cronin, *Professor of Engineering and Applied Science*
B.S. 1925, U.S. Naval Academy; M.S. 1932, Columbia University
- William Fay Crosswell, *Professorial Lecturer in Engineering*
B.S. 1952, Virginia Military Institute; M.S. 1954, Air Force Institute of Technology
- Louis de Pian, *Professor of Applied Science*
B.S. in M.E., B.S. in E.E. 1949, National Technical University, Greece; M.S. in E.E. 1950, Ph.D. 1952, Carnegie-Mellon University
- John Edward Duberg, *Adjunct Professor of Engineering*
B.S. 1938, Manhattan College; M.S. 1940, Virginia Polytechnic Institute; Ph.D. 1948, University of Illinois
- John Eftis, *Associate Professor of Engineering and Applied Science*
B.C.E. 1952, City College, New York; M.S. in C.E. 1958, Columbia University; D.Sc. 1967, George Washington University
- Marvin Eisenberg, *Associate Professor of Engineering and Applied Science*
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- Wayne Douglas Erickson, *Associate Professorial Lecturer in Engineering*
B.S. 1954, M.S. 1955, Michigan State University; M.S. 1958, D.Sc. 1962, Massachusetts Institute of Technology
- Charles Fain, *Assistant Professorial Lecturer in Engineering*
B.A. 1954, University of Tulsa; M.A. 1960, Harvard University; Ph.D. 1968, University of Oklahoma
- Raymond Richard Fox, *Professor of Engineering and Applied Science*
B.S. in C.E. 1949, M.S. in C.E. 1952, University of Washington
- Robert William Fralich, *Associate Professorial Lecturer in Engineering*
B.Ae.E. 1947, University of Cincinnati; M.Ae.E. 1952, University of Virginia; Ph.D. 1963, Virginia Polytechnic Institute
- Alfred Freudenthal, *Professor of Civil and Materials Engineering*
C.E. 1929, D.Sc. 1930, Prague Institute of Technology, Czechoslovakia; M.S. 1930, Prague University, Czechoslovakia

- Clifford Lynn Fricke, *Associate Professorial Lecturer in Engineering*
B.S. 1947, University of Nebraska; M.S. 1956, University of Virginia; Ph.D. 1967, Virginia Polytechnic Institute.
- William Henry Fuhr, *Assistant Professorial Lecturer in Engineering*
B.S. in E.E. 1954, M.S. 1957, Tulane University of Louisiana
- Robert Earle Fulton, *Professorial Lecturer in Engineering*
B.S. 1953, Auburn University; M.S. 1958, Ph.D. 1960, University of Illinois
- I. Edward Garrick, *Adjunct Professor of Engineering*
B.S. 1930, University of Chicago
- Michael Paul Gaus, *Associate Professorial Lecturer in Engineering*
B.S. 1954, M.S. 1956, Ph.D. 1959, University of Illinois
- Nelson Thomas Grisamore, *Professor of Engineering and Applied Science*
B.S. 1948, M.S. 1950, University of Illinois; Ph.D. 1954, George Washington University
- Donald Gross, *Associate Professor of Engineering and Applied Science*
B.S. 1956, Carnegie-Mellon University; M.S. 1959, Ph.D. 1962, Cornell University
- Leslie Arnold Guildner, *Adjunct Professor of Engineering*
B.A. 1948, M.A. 1949, University of Nebraska; Ph.D. 1954, Massachusetts Institute of Technology
- Forest Klaire Harris, *Adjunct Professor of Engineering*
B.A. 1921, M.S. 1923, University of Oklahoma; Ph.D. 1932, Johns Hopkins University
- Robert Bernard Heller, *Professor of Engineering and Applied Science*
B.S. 1946, M.S. 1948, Ph.D. 1951, St. Louis University
- Guenther Hintze, *Research Professor of Electrical Engineering*
B.S. 1927, M.S. 1929, Technological College, Breslau, Germany
- Leon Horn, *Professorial Lecturer in Engineering*
B.S. 1948, M.S. 1949, Wayne State University
- Francis Joseph Hughes, *Assistant Professorial Lecturer in Engineering*
B.S. 1960, University of Miami; M.S. in Engr. 1965, George Washington University
- Barry Ira Hyman, *Associate Professor of Applied Science*
B.Ae.E. 1958, Rensselaer Polytechnic Institute; M.S. 1961, St. Louis University; Ph.D. 1965, Virginia Polytechnic Institute
- Donald Herbert Jermain, *Associate Professorial Lecturer in Engineering*
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- Daniel Palmer Johnson, *Adjunct Professor of Engineering*
B.S. 1930, McPherson College; M.A. 1933, University of Kansas; Ph.D. 1939, University of Wisconsin
- Kenneth Johnson, *Professor of Engineering Administration*
B.A. 1931, Indiana State University; Ph.D. 1937, Purdue University
- Douglas Linwood Jones, *Assistant Professor of Engineering and Applied Science*
B.M.E. 1963, M.S. in Engr. 1965, George Washington University
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- Ali Muhlis Kiper, *Associate Professor of Engineering*
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- Edwin Thomas Kruszewski, *Associate Professorial Lecturer in Engineering*
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- Nicholas Kyriakopoulos, *Assistant Professor of Engineering*
B.E.E. 1960, M.S. in Engr. 1963, D.Sc. 1968, George Washington University
- George Koo Lea, *Assistant Professor of Applied Science*
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- Francis Scott LeBeau, *Assistant Professorial Lecturer in Engineering*
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- Robert Steven Ledley, *Research Professor of Engineering*
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- Harold Liebowitz, *Professor of Engineering and Applied Science; Dean of the School of Engineering and Applied Science*
B.A.E.E. 1944, M.A.E.E. 1946, D.A.E.E. 1948, Polytechnic Institute of Brooklyn
- Charles Santo Maiorana, *Assistant Professorial Lecturer in Engineering*
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- Martin Alexander Mason, *Professor of Engineering and Applied Science*
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- Alvin Greene McNish, *Adjunct Professor of Engineering*
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- Arnold Charles Meltzer, *Associate Professor of Engineering and Applied Science*
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- Maurice Morin, *Assistant Professorial Lecturer in Engineering*
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- John Henry O'Hara, *Assistant Professorial Lecturer in Engineering*
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- Walter Olstad, *Associate Professorial Lecturer in Engineering*
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- Manuel Jack Queijo, *Associate Professorial Lecturer in Engineering*
B.S. 1944, Worcester Polytechnic Institute; M.S. 1954, University of Virginia; Ph.D. 1963, Virginia Polytechnic Institute
- Samuel Joseph Raff, *Associate Professorial Lecturer in Engineering*
B.S. 1943, City College, New York; M.S. 1950, Ph.D. 1957, University of Maryland
- John Philip Raney, *Associate Professorial Lecturer in Engineering*
B.S. 1954, M.S. 1957, Ph.D. 1959, Purdue University
- Joseph John Rocchio, Jr., *Assistant Professorial Lecturer in Engineering*
B.S., M.S. 1958, Massachusetts Institute of Technology; Ph.D. 1966, Harvard University
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B.E.E. 1955, M.S. in Engr. 1959, George Washington University
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- Victor Selman, *Associate Professorial Lecturer in Engineering*
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B.E. 1956, Baroda University, India; M.E. 1958, Indian Institute of Science, Bangalore, India; M.E.E. 1961, Syracuse University
- Presson Scott Shane, *Professor of Engineering Administration*
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- Francis Earl Washer, *Professorial Lecturer in Engineering*
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- Paul Willis, *Assistant Professorial Lecturer in Engineering*
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M.S. 1932, D.Sc. 1933, University of Budapest, Hungary

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ANNUAL ISSUES OF THE UNIVERSITY BULLETIN

Requests for the following publications must include zip code and should be addressed as indicated.

COLLEGE OF GENERAL STUDIES, Dean of the College

NATIONAL LAW CENTER, Dean of the Center

STUDENT FINANCIAL AID, Office of Student Financial Aid

SCHOOL OF ENGINEERING AND APPLIED SCIENCE, Dean of the School

UNDERGRADUATE AND GRADUATE CATALOGUE (Arts and Sciences, Education, Government and Business, Public and International Affairs), Office of Admissions

SCHOOL OF MEDICINE, Admissions Office, School of Medicine

SUMMER SESSIONS, Dean of the Summer Sessions

SCHEDULE OF CLASSES: FALL AND SPRING SEMESTERS, Registrar

SCHEDULE OF CLASSES: SUMMER SESSIONS, Dean of the Summer Sessions

INDEX

A

Absence, regulations concerning, *See*
 Attendance
 Academic status, 13
 Academic work load, 18
 Accident insurance, 65
 Accreditation, E.C.P.D., 13
 Activities, student, 67-71
 Administration:
 School of Engineering and Applied
 Science, 42-43
 University, 75
 Admission:
 To doctoral study, 36
 To Master's programs, 28-29, 33-34,
 35
 To undergraduate study, 13-17
 Advanced standing, 17
 Advisory Council, 43
 Advisory system, 18

Aerospace Engineering:
 Courses, 78, 99, 106
 Graduate field and area of
 concentration, 97
 Air Force ROTC, 59-60
 Alumni associations, 62
 Alumni career services, 66
 Annual issues of the University
 Bulletin, 118
 Application for admission, 14, 29, 36, 46
 Application for graduation, 57
 Applied Science courses, 77-78
 Graduate, 78
 Undergraduate, 77-78
 Assistants in instruction, 117
 Assistantships, 52
 Attendance, 17-18, 30, 57
 Awards, 54

Bachelor of Science study, 13-27
 Basic curriculum, B.S. degree, 21-22

Board of Trustees, 74-75

C

Calendar for 1969-70, 4-5
 Career services, student and alumni, 66
 Center for Measurement Science, 38-39
 Changes in program of studies, 55
 Civil Engineering:
 Courses, 101-5
 Graduate, 102-5
 Undergraduate, 101-2
 Undergraduate field, 22
 College Entrance Board Examinations,
 14
 College work-study program, 53
 Colleges, schools, and divisions of the
 University, 73
 Communications:
 Courses, 82, 87-88, 91
 Graduate field and area of
 concentration, 80
 Computer Center, 60
 Computer Science:
 Courses, 81, 82-83, 88-89, 91
 Graduate field and area of
 concentration, 80

Conduct, 57
 Consortium of Universities of the
 Washington Metropolitan Area,
 Inc., 29, 59
 Continuing engineering education, 40
 Continuing student, 44-45
 Continuous registration, 30, 38, 47, 56
 Conversion table for renumbering of
 courses, 76
 Controls and Systems:
 Courses, 84, 89-90, 91-92
 Graduate field and area of
 concentration, 80
 Cooperative programs, 59-60
 Counseling, 18, 65-66
 Course numbers, explanation of, 77
 Courses of Instruction, 77-111
 Credit:
 Credit hours, explanation of, 77
 Credit hours, maximum allowed, 18
 Earned in service schools, 17
 For advanced placement examinations,
 17

Credit (cont'd):

- For summer work, 56
- Toward a degree, 56
- Transfer from other institutions, 17
- Curricula, graduate, *See* Graduate study

- Curricula, undergraduate, 20-27
 - Basic, 21-22
 - Civil Engineering field, 22
 - Computer Science area, 24-25
 - Electrical Engineering field, 22-25
 - Measurement Science field, 25
 - Mechanical Engineering field, 26-27

D

- Davis-Hodgkins House, 67
- Dean's Council, 43
- Degree requirements, time to complete:
 - Doctoral, 38
 - Master's, 31
- Degrees:
 - Bachelor of Science, 13-27
 - Doctor of Science, 36-38
 - Master of Engineering Administration, 27-31, 34-36
 - Master of Science, 27-34

- Dishonesty, regulations concerning, 55
- Dismissal of students, 58
- Dissertation, 37-38
- Distinction, degree earned with, 20
- Doctoral program, 36-38
- Dormitories, 63-64
- Dropping courses, 55-56

E

- Early decision plan for admission, 15
- Educational opportunity grants, 53
- Electrical Engineering:
 - Courses, 80-92
 - Graduate, 84-92
 - Undergraduate, 80-84
 - Departmental staff, 79
 - Graduate fields and areas of concentration, 80
 - Master's study, 31-32
 - Undergraduate field, 22-25
- Electronics:
 - Courses, 81, 82, 85-86, 91
 - Graduate field and area of concentration, 80
- Emeritus faculty, 112
- Employment, student, 53, 66
- Engineer Alumni Association, 62
- Engineering Administration:
 - Courses, 92-96
 - Graduate, 93-96
 - Undergraduate, 92-93
 - Departmental staff, 92
 - Graduate fields and areas of concentration, 92
 - Master's study, 34-36

- Engineering Mechanics:
 - Courses, 99-101
 - Departmental staff, 96
 - Graduate fields and areas of concentration, 97-98
 - Master's study, 32-33
- Engineering, study of, 9-11
- Engineers' Council, 47, 68
- English, use of correct, 20
- Examinations:
 - Advanced placement, 17
 - College Entrance Board, 14
 - Doctoral, final, 38
 - Doctoral, qualifying, 37
 - For admission, 14, 16, 46
 - Graduate Record, 28
 - Master's comprehensive, 30
 - Placement, on entrance, 21
 - Test of English as a foreign language, 16

F

- Faculty, 112-17
- Fatigue and Structural Reliability, Institute for the Study of, 41-42

- Fees, 45-47
 - Payment of, 48
 - Psychological Clinic, 66
 - Reading Center, 61

Fees (cont'd):
 Residence hall rates, 64
 Speech and Hearing Clinic, 61
 Fellowships, 51-52
 Fields and Waves:
 Courses, 81, 82, 86-87, 91
 Graduate field and area of
 concentration, 80
 Final examination, doctoral, 38
 Financial aid, 48, 49-54
 Financial regulations, 48-49

Fluid Mechanics:
 Courses, 78, 107
 Graduate field and area of
 concentration, 97
 Food service, 64
 Foreign students:
 Admission, 15-16
 Adviser, 66
 Financial aid, 54
 International Students' Society, 66
 Language test, 16
 Fraternities, 70
 Freshman Admission, 14-15

G

General Alumni Association, 62
 General Measurement Science course,
 109
 Grades, 18-19, 30-31
 Graduate study:
 Doctoral, 36-38
 Master's, 27-36
 Electrical Engineering, 31-32
 Fields and areas of concentration,
 80
 Engineering Administration, 34-36
 Fields and areas of concentration,
 92
 Engineering Mechanics, 32-33
 Fields and areas of concentration,
 97-98
 Measurement Science, 38-39
 Fields and areas of concentration,
 109
 Operations Research, 33-34
 Fields and areas of concentration,
 92

Graduate Record Examination, 28
 Graduation fees, 46
 Graduation requirements, 20, 29-30,
 36-38, 57
 Grants, educational opportunity, 53
 GWU—NASA-Langley graduate
 program, 31-32, 33, 40-41

H

Health and accident insurance, 65
 Health services, 64-65
 History of the School, 12
 History of the University, 72-73

Honor societies, 70
 Honorary Trustees, 75
 Honors list, 19-20
 Honors, special, 20

I

Institute for the Study of Fatigue and
 Structural Reliability, 41-42
 Instrumentation courses, 109-110

Insurance, health and accident, 65
 Inter-faith Forum, 67
 International students, 66

L

- Language requirements for doctoral study, 36-37
- Language test for foreign students, 16
- Leave of absence, *See* Continuous registration
- Libraries, 57, 73
- Loan funds, 52-53
- Lost and Found office, 58

M

- Master's comprehensive examination, 30
- Master's programs, 27-36
- Materials Science:
 - Courses, 78, 99-100, 100
 - Graduate field and area of concentration, 97
- Measurement Science:
 - Center for, 38-39
 - Courses, 109-11
 - Graduate, 110-11
 - Undergraduate, 109-10
 - Graduate fields and areas of concentration, 109
 - Staff, 109
- Mechanical Engineering:
 - Courses, 105-8
 - Graduate, 106-8
 - Undergraduate, 105-6
 - Undergraduate field, 26-27
- Medical Engineering:
 - Courses, 84, 91, 92
 - Graduate field and area of concentration, 80
- Message from the Dean, 6
- Mid-semester warning, 19
- Military leave, 57

N

- NASA-Langley graduate program, 31-32, 33, 40-41
- Networks:
 - Courses, 80-81, 81-82, 84-85, 91
 - Graduate field and area of concentration, 80
- Nondegree students, 77

O

- Operations Research:
 - Courses, 94, 96
 - Graduate fields and areas of concentration, 92
 - Master's study, 33-34
- Organizations, student, 70-71

P

Payment of fees, 48
 Performing arts, 69
 Placement examinations, advanced, 17
 Policy on release of student information, 58
 Policy on Selective Service information, 58
 Precise Measurements:
 Courses, 111
 Graduate field and area of concentration, 109

Prizes, 54
 Probation, 19
 Professional organizations, 70
 Property, responsibility for, 58
 Psychological Clinic, 65-66
 Publications, student, 71

Q

Qualifying examination, doctoral, 37
 Quality-point index, 19

R

Reading Center, 61
 Readmission, 16
 Readmitted student, 44
 Refunds, 48-49
 Registration, 29, 44-45
 Regulations, 55-58
 Financial, 48-49
 For Bachelor's study, 17-20
 For Master's study, 30-31
 Release of student information, policy on, 58
 Religious life, 66-67
 Religious organizations, 71
 Research, doctoral, 37-38
 Research, measurement science, 39
 Reserve Officers' Training Corps, Air Force, 59-60
 Residence halls, 63-64
 Residence requirements:
 For Bachelor's degree, 20
 For Doctoral degree, 38
 For Master's degrees, 31
 Rules, right to change, 58

S

Scholarship requirements, 18-20, 30-31
 Scholarships, 50-51, 51
 Selective Service information, policy on, 58
 Service school credit, 17
 Soil Mechanics and Foundation Engineering:
 Courses, 103
 Graduate field and area of concentration, 98
 Solid Mechanics:
 Courses, 99, 100
 Graduate field and area of concentration, 98
 Sororities, 71
 Special honors, 20
 Specific Measurements courses, 110
 Speech and Hearing Clinic, 60-61
 Sports, 69
 Staff of instruction, 112-17
 Structural Engineering:
 Courses, 102-3, 103-4
 Graduate field and area of concentration, 98
 Student activities, 67-71
 Eligibility for, 68
 Office, 67
 Student career services, 66
 Student government, 67-68
 Student information, policy on release of, 58
 Student organizations, 70-71
 Student services, 63-67
 Summer school credit, 56
 Suspension, 19

T

Thermal Sciences:

Courses, 107, 108

Graduate field and area of
concentration, 98

Thesis, 29-30

Time to complete degree requirements:

Doctoral, 38

Master's, 31

Traineeships, 52

Transcripts of record, 15, 29, 47, 56

Transfer credit, 17, 29

Transfer students, 15

Trustees, Board of, 74-75

Tuition:

Deposit, 16, 46

Fees, 45-46

Projected increases, 47

U

Undergraduate study, 13-27

University Center, 67

University Computer Center, 60

V

Veterans Education, 61-62

Vocational counseling, 65-66

W

Warning, mid-semester, 19

Withdrawal, 48-49, 55-56

Work load, academic, 18

Work-study program, college, 53

COLLEGES AND SCHOOLS—DEGREE PROGRAMS

COLUMBIAN COLLEGE OF ARTS AND SCIENCES: Associate in Arts (A.A.), Bachelor of Arts (B.A.), Bachelor of General Studies (B.Gen.Stud.), Bachelor of Science (B.S.), Bachelor of Science in Environmental Health (B.S. in Env.Health), Bachelor of Science in Geodetic and Cartographic Science (B.S. in Geod. and Cart.Sc.), Bachelor of Science in Medical Technology (B.S. in Med.Tech.), and Bachelor of Science in Oceanography (B.S. in Ocea.)

GRADUATE SCHOOL OF ARTS AND SCIENCES: Master of Arts (M.A.), Master of Fine Arts (M.F.A.), Master of Music (Mus.M.), Master of Science (M.S.), and Doctor of Philosophy (Ph.D.)

SCHOOL OF MEDICINE: Doctor of Medicine (M.D.)

NATIONAL LAW CENTER: Juris Doctor (J.D.), Master of Laws (LL.M.), Master of Comparative Law (M.Comp.L.), Master of Comparative Law (American Practice) (M.Comp.L.(Am.Prac.)), and Doctor of Juridical Science (S.J.D.)

SCHOOL OF ENGINEERING AND APPLIED SCIENCE: Bachelor of Science (Civil Engineering) (B.S. (C.E.)), Bachelor of Science (Electrical Engineering) (B.S. (E.E.)), Bachelor of Science (Measurement Science) (B.S. (Meas.S.)), Bachelor of Science (Mechanical Engineering) (B.S. (M.E.)), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

SCHOOL OF EDUCATION: Bachelor of Arts in Education (B.A. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Teaching (M.A.T.), Master of Arts in Education (M.A. in Ed.), Education Specialist (Ed.S.), and Doctor of Education (Ed.D.)

SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION: Bachelor of Business Administration (B.B.A.), Bachelor of Science in General Studies (B.S. in Gen.Std.), Master of Arts in Government (M.A. in Govt.), Master of Arts in Health Care Administration (M.A. in H.C.A.), Master of Business Administration (M.B.A.), Master of Public Administration (M.P.A.), Master of Science in Administration (M.S. in Adm.), Master of Science in Business Administration (M.S. in B.A.), Master of Urban and Regional Planning (M. of Urb. and Reg. Plan.), Graduate Certificate in Health Care Administration (Grad.Cert. in H.C.A.), Doctor of Business Administration (D.B.A.), and Doctor of Public Administration (D.P.A.)

SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS: Bachelor of Arts (B.A.), Certificate of the Institute for Sino-Soviet Studies (Cert. of I.S.S.S.), Master of Arts (M.A.), and Master of Science in International Affairs (M.S. in I.A.)

THE GEORGE WASHINGTON UNIVERSITY

COLUMBIAN COLLEGE OF ARTS AND SCIENCES. 1821

THE GRADUATE SCHOOL OF ARTS AND SCIENCES. 1893

THE SCHOOL OF MEDICINE. 1825

THE NATIONAL LAW CENTER. 1865

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE. 1884

THE SCHOOL OF EDUCATION. 1907

THE SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION. 1928

THE SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS. 1928

THE COLLEGE OF GENERAL STUDIES. 1950

THE DIVISION OF UNIVERSITY STUDENTS. 1930

THE SUMMER SESSIONS. 1916

THE UNIVERSITY HOSPITAL. 1898

GEORGE WASHINGTON UNIVERSITY BULLETIN



COLLEGE
OF
GENERAL STUDIES

1969-1970

CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Office of Admissions. Mailing address for all University offices unless otherwise indicated is The George Washington University, Washington, D.C. 20006.

Information concerning courses of instruction, programs, and faculties of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on page 118. Zip code is essential for mailing catalogues.

Admission

Graduate

| | |
|---|--|
| Arts and Sciences..... | Dean of The Graduate School of Arts and Sciences |
| Education..... | Dean of The School of Education |
| Engineering and Applied Science..... | Dean of The School of Engineering and Applied Science |
| Accounting, Business Administration, Business and Economic Statistics, Health Care Administration, International Business, Personnel Administration, Public Administration, Urban and Regional Planning | Dean of The School of Government and Business Administration |
| International Affairs and Public Affairs..... | Dean of The School of Public and International Affairs |
| Law..... | Dean of The National Law Center |
| School of Medicine..... | 1331 H Street, Washington, D.C. 20005 |
| Undergraduate..... | Office of Admissions |
| Alumni Association..... | Alumni Office |
| Medical Alumni Association..... | 1331 H Street, Washington, D.C. 20005 |
| Financial Aid..... | Student Financial Aid Office |
| Foreign Students..... | Adviser to International Students |
| Gifts and Bequests..... | Resources Program |
| Housing..... | Housing Administrator |
| Off-campus and Noncredit Courses..... | Dean of The College of General Studies |
| Student Employment..... | Student and Alumni Career Services Office |
| Summer Sessions..... | Dean of The Summer Sessions |
| Transcripts of Records..... | Registrar |
| Veterans Education..... | Registrar |

THE GEORGE WASHINGTON UNIVERSITY BULLETIN
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THE GEORGE WASHINGTON UNIVERSITY BULLETIN



**THE COLLEGE OF GENERAL
STUDIES 1969-70**

WASHINGTON, D.C. 20006



From the Dean's desk . . .

We are living in a dynamic era; an era of constant change that presents many challenges. During the past fifty years we have experienced more technological advancement than ever before in the history of mankind. Change does not confine itself to technology alone; it has its effects on every facet of our society. Man must continuously reassess his role in view of change and society. Continuing education provides an opportunity to keep abreast.

This catalogue has been prepared primarily for the student interested in either full-time or part-time study in higher education. The College of General Studies administers off-campus courses, degree programs, conferences, seminars, and institutes in cooperation with other colleges and schools of George Washington University.

EUGENE R. MAGRUDER
DEAN

CONTENTS

| Page | |
|------|--|
| 2 | Message from the Dean |
| 3 | The Calendar |
| 7 | The College of General Studies |
| 8 | Admissions |
| 9 | Registration |
| 9 | Fees and Financial Regulations |
| 13 | Regulations |
| 22 | Student Services |
| 22 | The Bachelor's Degrees |
| 33 | Master of Science in Administration |
| 41 | Military Cooperative Programs |
| 41 | Noncredit Programs |
| 42 | Continuing Education for Women |
| 44 | Index to Off-campus Centers |
| 46 | Off-campus Centers |
| 60 | Courses of Instruction |
| 110 | The University |
| 116 | Appendix: Recently Established Regulations |
| 118 | Index |

1969

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THE CALENDAR 1969-70*

1969-70 FALL SEMESTER

- August 21-September 19 Off-campus registration† (days of registration and beginning classes will be announced in *Off-campus Schedule of Classes*)
Application for February graduation due as part of registration
- September 13 Open House for M.S. in Adm. students, 10 am, Lisner Auditorium *Saturday*
- ‡September 18-20 Registration on campus† *Thursday-Saturday*
Application for February graduation due as part of registration
- September 22 Classes begin off campus *Monday*
- September 23 Classes begin on campus *Tuesday*
- October 4 CGS meeting of Staff of Instruction, 9:30 am, Lisner Auditorium *Saturday*
- October 4 Master's Comprehensive Seminar, 2 pm, Lisner Auditorium *Saturday*
- November 11 Veterans Day (holiday) *Tuesday*
- November 26 Thanksgiving recess begins after last class *Wednesday*
- December 1 Classes resume *Monday*
- December 5-6 Master's Comprehensive Examinations *Friday-Saturday*
- §December 20 Last day of campus fall-semester classes *Saturday*
- December 20 Christmas recess begins after last class *Saturday*
- January 5 Off-campus classes resume *Monday*
- January 5 Master's theses of February candidates due in Dean's Office *Monday*
- January 5-9 Campus fall-semester reading period *Monday-Friday*
- January 10-22 Campus examination period *Saturday-Thursday*
- ||January 23 Last day of off-campus fall-semester classes *Friday*

*Off-campus courses organized at any time.
†Application for graduation and for Master's Comprehensive Examinations is the student's responsibility and must be made when registering for last courses required for degree.
‡Courses of registration will be announced in the *Campus Schedule of Classes*.
§In certain courses, classes may be continued through the fall-semester reading period, January 5-9.
||The final examination will be given at last class meeting.

1970 SPRING SEMESTER

- January 5-30* Off-campus registration* (days of registration and beginning classes will be announced in *Off-campus Schedule of Classes*)
Application for June graduation due as part of registration
- January 17* Open House for M.S. in Adm. students, 10 am, Lisner Auditorium *Saturday*
- †January 29-31* Registration on campus* *Thursday-Saturday*
Application for June graduation due as part of registration
- January 31* CGS meeting of Staff of Instruction, 9:30 am, Lisner Auditorium *Saturday*
- January 31* Master's Comprehensive Seminar, 2 pm, Lisner Auditorium *Saturday*
- February 2* Classes begin off campus and on campus *Monday*
- February 21* Winter Convocation *Saturday*
- February 23* Holiday *Monday*
- March 21* Spring recess begins after last class *Saturday*
- March 31* Classes resume *Tuesday*
- April 17-18* Master's Comprehensive Examinations *Friday-Saturday*
- May 4* Master's theses of June candidates due in Dean's Office *Monday*
- ‡May 9* Last day of campus spring-semester classes *Saturday*
- May 11-15* Campus spring-semester reading period *Monday-Friday*
- May 16-28* Campus examination period *Saturday-Thursday*
- §May 29* Last day of off-campus spring-semester classes *Friday*
- May 30* Memorial Day (holiday) *Saturday*
- June 7* Commencement *Sunday*

1970 SUMMER SESSIONS

* Application for graduation and for Master's Comprehensive Examinations is the student's responsibility and must be made when registering for last courses required for degree.

† Hours of registration will be announced in the *Campus Schedule of Classes*.

‡ In certain courses, classes may be continued through the spring-semester reading period, May 11-15.

§ The final examination will be given at last class meeting.

There are two seven and one-half week sessions and one fifteen week session. Days of registration and beginning classes will be announced in the *Off-campus Schedule of Classes*.

THE COLLEGE OF GENERAL STUDIES

THE COLLEGE OF GENERAL STUDIES was established in 1950 as the off-campus college of the University, to extend the educational facilities of the University, introduce experimental programs of study for mature students, and provide educational services other than formal programs of study. The College works closely with education directors; school officials; personnel administrators in government, business, and industry; and others interested in developing inservice training. The College also conducts conferences, seminars, and non-credit courses.

Any organization, group, installation, or agency interested in having the University organize and conduct a course or a comprehensive educational program should contact the Director of Credit Programs, College of General Studies, Telephone 676-7020.

ACADEMIC STATUS

The academic standards of the University are maintained in off-campus credit courses.

The College of General Studies is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools.

DEGREE PROGRAMS

UNDERGRADUATE

- Bachelor of General Studies
- Bachelor of Science in Environmental Health
- Bachelor of Science in General Studies
- Bachelor of Science in Geodetic and Cartographic Science
- Bachelor of Science in Oceanography

GRADUATE

- Master of Science in Administration

COUNSELING

Students in the College of General Studies may obtain counseling and assistance in program planning in the offices of the College or from Field Representatives at the installations and agencies at which courses are held. Appointments may be made by calling the College of General Studies: Telephone 676-7028; or through the Education Director at individual installations. University counselors are also available at all installations and agencies during announced registration periods, and at scheduled times each month.

DEAN'S COUNCIL

E.R. Magruder (*Chairman*), H.L. LeBlanc, P.J. Mika, Hyman Orlin, H.R. Page, J.P. Reesing, Jr., K.E. Stromsem, Elzberry Waters, Jr., H.F. Bright (*ex officio*), F.R. Houser (*ex officio*), J.Y. Ruth (*ex officio*), P.H. Rhynehart (*ex officio*)

COMMITTEE ON SCHOLARSHIP

E.R. Magruder (*Chairman*), G.F. Conner, J.A. Morgan, Jr., Charles Rice, Elzberry Waters, Jr., E.G. Hammer (*ex officio*), F.R. Houser (*ex officio*)

Admission**ADMISSION AS A DEGREE STUDENT**

FOR ENTRANCE REQUIREMENTS for Bachelor's degree candidacy, see pages 23-24; for Master's degree candidacy, see pages 33-34.

Application should be made only when the entrance requirements have been met and if there is a reasonable assurance that the student will be in the area long enough to complete degree requirements. Forms for application may be obtained from the College of General Studies, a Field Representative, or the Installation Education Director. An application for admission, together with credentials required and an application fee of \$25,* should be sent (1) to the Office of Admissions of the University for Bachelor's degree study; (2) to the Admissions Officer, School of Government and Business Administration, for study toward the degree of Master of Science in Administration.

ADMISSION AS A NONDEGREE STUDENT

There are no preregistration formalities for the following categories of non-degree students: those who wish to enroll in off-campus courses for self-improvement or those who have not yet applied for degree candidacy.

Nondegree students must meet the prerequisites prescribed for specific courses and, if they have previously attended a college or university, be in good standing.

* The application fee must be by check or postal money order, payable to George Washington University.

The application fee is waived for a student applying for readmission who was registered as a degree candidate at the time of his last registration at this University and has not since registered at another institution.

ing. The nondegree student enrolling in graduate courses must have a Bachelor's degree, or 90 semester hours of undergraduate work and the permission of the instructors in the courses.

Registration

OFF-CAMPUS REGISTRATION is conducted before or at the first class meeting of each course, at times and places stated in the *Off-campus Schedule of Classes*, available well in advance of each semester.

Registration in an off-campus course constitutes admission to that course only. It does not admit the student to campus courses or to degree candidacy. In the College of General Studies, only students admitted to degree candidacy may enroll as full-time students (for 12 semester hours or more). Those who have been graduated from high school recently and wish to be *full-time freshman* students at this University should apply for admission to the appropriate college or school on campus.

Auditing.—With the permission of the instructor, students may register as "Auditors." An auditor is not required to take active part in the exercises or to take examinations; he receives neither grades nor credit. Tuition is the same for the auditor as for the student registered for credit. With the approval of the Dean, a student may change from credit to audit status during the first third of the semester. A student who takes a course as an auditor may not repeat it later for credit.

Concurrent Registration.—A student registered as a degree candidate in any other college or school of the University may take credit courses in the College of General Studies only by permission (granted prior to registration) of the dean of the college or school concerned. A "College of General Studies Off-campus Concurrent Registration Permit" form must be obtained from the appropriate college or school, signed by the dean of that college or school, and presented at the time of registration in the College of General Studies.

Service personnel enrolled full time for campus courses need the permission of the Dean of the College of General Studies to register concurrently for off-campus courses.

Any student taking course work in another college or school of the University or at another institution through the Consortium of Universities of the Washington Metropolitan Area, Inc., must have the permission of his Dean.

Fees and Financial Regulations

ALL FEES should be paid by check or money order, made payable to George Washington University.

The following fees were adopted for the academic year 1969-70. (See page 11 for projected tuition increases for 1970-73.)

10 COLLEGE OF GENERAL STUDIES

Tuition

| | |
|--|----------|
| On campus: | |
| Full-time undergraduate program (12 to 18 hours), each semester..... | \$900.00 |
| Part-time undergraduate program or hours in excess of 18, for each semester hour | 64.00 |
| Graduate study, for each semester hour..... | 47.00 |
| Off campus:* | |
| For each semester hour..... | 54.00 |
| War Colleges' and ICAF programs, for each semester hour..... | 54.00 |
| Thesis:† | |
| War Colleges' and ICAF programs, for each semester hour..... | 54.00 |
| Off-campus programs other than War Colleges' and ICAF, for each semester hour | 64.00 |

University Center Fee (charged only to students registered on campus, nonrefundable)

| | |
|--|-------|
| For students registered for 11 or more semester hours on campus: | 37.50 |
| For each semester..... | |
| For students registered for less than 11 semester hours in a semester on campus: | 3.50 |
| For each semester hour for which the student registers..... | |
| For on-campus degree candidates maintaining "continuous registration" status: | 3.50 |
| For each semester..... | |

Special Fees

| | |
|---|-------|
| Application fee (degree candidate), nonrefundable..... | 25.00 |
| Graduation fee, due and payable at the time of registration for the last semester or summer session..... | 25.00 |
| Continuous Registration fee, <i>off-campus degree candidates</i> , to maintain "continuous registration" during any semester of absence from the University† | 47.00 |
| Continuous Registration fee, <i>on-campus degree candidates</i> , to maintain "continuous registration" during any semester of absence from the University or after completion of tuition requirements† | 64.00 |
| Continuous Registration fee, <i>War Colleges' or ICAF degree candidates</i> , to maintain "continuous registration" during any semester of absence from the University† | 54.00 |
| Fee for binding two copies of the Master's thesis (other than ICAF programs) | 10.00 |
| Fee for binding two copies of the Master's thesis (ICAF programs)..... | 7.00 |
| Withdrawal fee, charged in certain cases..... | 5.00 |
| Reinstatement fee, for reinstatement after financial suspension for nonpayment of fees..... | 15.00 |

* Except in War Colleges' and ICAF programs.

† Payment of tuition for a Master's thesis entitles the candidate, during the period of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, additional time may be granted in accordance with the regulations of the school in which the student is registered. (See page 18 for regulations governing Military Leave.)

‡ Payment of the continuous registration fee entitles the student who is granted leave of absence to return and continue his work toward a degree under the academic requirements which were in force at the time of his first registration. The continuous registration fee applies toward neither tuition fee nor residence requirements for the degree. This fee does not apply to students granted Military Leave (see page 18).

| | |
|---|---------|
| Returned check fee, charged a student whose check is returned because of insufficient funds or improper drafting..... | \$15.00 |
| Fee for each examination to waive a curriculum requirement..... | 5.00 |
| Validating Examination fee..... | 94.00 |
| Transcript fee, charged for each transcript of record..... | 1.00 |

PROJECTED TUITION INCREASES 1970-73

Projected increases for the academic years 1970-71, 1971-72, and 1972-73 have been estimated as follows:

On Campus

| | |
|--|----------|
| Increase by year (full-time undergraduate students): | |
| 1970-71 | \$100.00 |
| 1971-72 | 100.00 |
| 1972-73 | 100.00 |
| Increase by semester hour (graduate and part-time undergraduate students): | |
| 1970-71 | 4.00 |
| 1971-72 | 4.00 |
| 1972-73 | 4.00 |

Off Campus

| | |
|---|------|
| Increase by semester hour (except War Colleges' and ICAF programs): | |
| <i>Course Work Other than Thesis</i> | |
| 1970-71 | 3.00 |
| 1971-72 | 3.00 |
| 1972-73 | 3.00 |
| <i>Thesis</i> | |
| 1970-71 | 4.00 |
| 1971-72 | 4.00 |
| 1972-73 | 4.00 |
| Increase by semester hour (War Colleges' and ICAF programs including thesis): | |
| 1970-71 | 4.00 |
| 1971-72 | 4.00 |
| 1972-73 | 3.00 |

It is not possible to project future economic data with certainty. Barring a severe change in the national economy, however, the above listed tuition schedule will be followed.

PAYMENT OF FEES

OFF-CAMPUS COURSES

Fees for each semester are due and payable in full at the time of each registration; however, a student registering for a *fifteen-week credit course* may sign a contract at each registration to make payments in three equal installments—one-third at the time of registration, one-third 30 days after the course begins, and one-third 60 days after the course begins. Payments are due at the stipulated times. Payment envelopes are provided by the College; students will not be billed.

Tuition and fees for credit courses lasting less than fifteen weeks, and for all noncredit courses, are payable in full at registration.

Financial Suspension.—A student who fails to meet a tuition payment when due is automatically suspended and may not attend classes until he has been officially reinstated by the Student Accounts Office and has paid all accrued fees and a \$15 reinstatement fee.

CAMPUS COURSES

All fees are payable at the Office of the Cashier. Tuition and fees for each semester are due and payable in full at the time of each registration.

A student registered for 6 semester hours or more may sign a contract with the Student Accounts Office at the time of each registration permitting him to pay one-half of the total tuition and fees (except for fees payable in advance) at the time of registration and the remaining half on or before November 5, 1969 (for the fall semester) and March 18, 1970 (for the spring semester). A service fee of \$5 will be charged for the use of this deferred payment plan. The University will not obligate itself to notify the student, in advance, of the payment-due date for the second half of the semester charges. Students who fail to make any payment when due will be automatically suspended and may not attend classes until they have paid all accrued fees and a \$15 reinstatement fee and have been officially reinstated by the Student Accounts Office.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Student Accounts Office.

REFUND OF FEES

OFF-CAMPUS COURSES

No fees will be refunded (except in the event of course cancellations) for any course of less than eight weeks' duration, or any noncredit course.

*Fifteen-week Credit Course.**—In no case will the first third of the tuition cost be refunded unless the course is cancelled. Two-thirds of the total charge will be waived or refunded if the course is dropped within the first 30 days. One-third of the total cost will be waived or refunded if the course is dropped within the second 30 days. No refund will be allowed on withdrawal subsequent to the second 30-day period. In no case will tuition be reduced or refunded because of absence from classes.

This regulation does not apply if a student withdraws from one course to enter another.

CAMPUS COURSES

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the dean of the college, school, or division in which the student is registered. Notification to an instructor is not an acceptable notice.

* If a student is transferred from the area under military orders, he will be entitled to a credit of at least one-third of his tuition for that semester. In case the student has paid more than one-third of his tuition, refund of tuition over the one-third credit will be governed by the regulations set forth for *Fifteen-week Credit Course*.

In authorized withdrawals and changes in schedule, cancellations of semester tuition charges and fees will be made in accordance with the following schedule:

1. *Complete withdrawal from the University:*

FALL SEMESTER

| | |
|--|-------------|
| Withdrawal dated on or before September 26, 1969..... | 90 per cent |
| Withdrawal dated September 29 to October 10, 1969..... | 75 per cent |
| Withdrawal dated October 13 to October 24, 1969..... | 50 per cent |
| Withdrawal dated after October 24, 1969..... | none |

SPRING SEMESTER

| | |
|---|-------------|
| Withdrawal dated on or before February 6, 1970..... | 90 per cent |
| Withdrawal dated February 9 to February 20, 1970..... | 75 per cent |
| Withdrawal dated February 23 to March 6, 1970..... | 50 per cent |
| Withdrawal dated after March 6, 1970..... | none |

2. For a change in status from full-time to part-time student or for partial withdrawal by a part-time student, the above schedule applies to the difference in charges between the original program and the adjusted program continuing in effect.

3. A student enrolled in a full-time program who drops or adds a course and continues to be in a full-time program will have no financial adjustments of tuition made other than those involving course fees.

4. A student who is granted military leave before completing a semester is given credit for all tuition paid for that semester, for use upon his return to the University. No tuition will be refunded to a student granted military leave (see "Military Leave," page 18).

In no case will tuition be reduced or refunded because of absence from classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this be credited to another semester.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Regulations

CAMPUS STUDY

OFF-CAMPUS DEGREE CANDIDATES may register for campus courses approved for their programs, if these courses are not conveniently available at off-campus centers. Students must notify the Office of Student Records, College of General Studies, telephone 676-7013, at least two weeks prior to the date of campus registration so that an IBM registration packet may be prepared. Packets may be picked up by the student at the University Library prior to and during registration.

A student may register for on-campus courses as a nondegree student in the Division of University Students.

ACADEMIC WORK LOAD

Only students admitted to degree candidacy may enroll as full-time students, i.e., for 12 or more hours in a semester. Students taking course work to qualify

for degree candidacy in this College may take not more than 10 hours in a semester.

A full-time student who is not on probation may take ordinarily not more than 17 semester hours. A student employed more than 20 hours a week, who is not on probation, may take not more than 10 hours.

A full-time student whose quality-point index is 3.50 or higher may take not more than 19 hours. An employed student who meets the same standard may take not more than 12 hours.

A student on probation normally may take not more than 3 semester hours.

A student who accepts employment after registration or at any time during a semester must report that fact immediately to the Dean so that his program may be adjusted, if necessary.

ATTENDANCE

In a fifteen-week course in which classes meet once a week, *one* unexcused absence is permitted. In a fifteen-week course in which classes meet twice a week, *two* unexcused absences are permitted. In an eight-week course meeting twice a week, *one* unexcused absence is permitted. Minimum absences per se will not be used as the sole reason for failing a course. It is the University policy that students attend courses regularly.

Excuses must be made by written application to the instructor, or by verbal permission later confirmed in writing. The student is held responsible for all course work.

EXAMINATION FOR WAIVING CURRICULUM REQUIREMENTS

During the first full semester of degree candidacy, a student wishing to omit a required course may, with the permission of the faculty adviser, take a waiver examination, the passing of which relieves him of the curriculum requirement and qualifies him for registration in an advanced course. *Passing of the waiver examination does not entitle the student to credit toward a degree.* The fee for each 3-hour course examination is \$5.

SCHOLARSHIP

GRADES

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors or the administrative staff.

Undergraduate Grading System.—A, excellent; B, good; C, average; D, passing; F, failing; CR, credit; I, incomplete; W, authorized withdrawal.

Graduate Grading System.—A, excellent; B, good; C, minimum pass; F, fail; CR, credit; I, incomplete; W, authorized withdrawal. An average of B or better is required for the Master's degree. The grade of C is not considered as failing but must be counter-balanced by a grade of A in a graduate course of equal status.

Whenever a grade has not been assigned, the symbol *I* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *I* indicates

that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by written permission of the appropriate dean. An incomplete which is not removed within one calendar year is automatically changed to an *F*. An incomplete cannot be removed by repeating the course.

An undergraduate student may not repeat for credit a course in which he has received a grade of *D* or above and a graduate student may not repeat for grade a course in which he has received a grade of *C* or above, unless required to do so by the department concerned. A written statement to this effect must be submitted to the Registrar by the appropriate departmental chairman.

QUALITY-POINT INDEX

Quality points are computed from grades as follows:

For each semester hour of the letter grade—*A*, 4 points; *B*, 3 points; *C*, 2 points; *D*, 1 point; *F*, no points.

Scholarship is computed in terms of the quality-point index. This is done by dividing the total number of quality points by the total number of semester hours for which the student has registered. Example: if a student received an *A* in one three-credit course, and a *B* in another three-credit course, he would compute his quality-point index this way:

$$A = 4 \times 3 \text{ (semester hours)} = 12$$

$$B = 3 \times 3 \text{ (semester hours)} = 9$$

6

$$21 \div 6 = 3.5 \text{ quality-point index}$$

Courses marked *W*, *I*, or *CR* are not considered in determining the index, except that courses marked *I* will be considered when a formal grade is recorded. An incomplete which is not removed within one calendar year is automatically changed to an *F*. Grades in courses taken at other institutions are not considered in computing the quality-point index.

WARNINGS

At stated intervals during the academic year students who are doing work of *D* grade or lower in courses with departmental numbers below 100 receive "warnings." A "warning" constitutes notice to the student that he must consult his instructor and his adviser at the earliest opportunity. "Warning periods" are established during the seventh and eighth weeks of fifteen-week courses, and during the third and fourth weeks of eight-week courses.

PROBATION

Undergraduate Probation.—A student must maintain a quality-point index of at least 2.00 or be placed on probation.

A student who has attempted 12 or more semester hours of work and whose cumulative quality-point index is between 1.50 and 2.00 is placed on probation for the period in which he attempts 12 additional semester hours of work. If his quality-point index is still below 2.00 at the end of his probationary period, he is suspended. The Committee on Scholarship reserves the right to extend

the period of probation even if the student has earned an average of above 2.00. A student placed on probation for a third period, whether successive or after an interval, is suspended.

Graduate Probation.—A student who has attempted 6 or more semester hours and whose quality-point index is between 2.50 and 3.00 is placed on probation for the period in which he attempts 12 additional semester hours of work. If his quality-point index is still below 3.00 at the end of his probationary period, he is suspended. If, after probation is removed, a student's quality-point index again falls below 3.00, he is suspended.

SUSPENSION*

Undergraduate Suspension.—A student who has attempted 12 or more semester hours of work and whose cumulative quality-point index is below 1.50 is subject to suspension; however, a student who has a quality-point index between 1.40 and 1.50 is considered by the Committee on Scholarship, which may retain him on probation or suspend him. A student who has attempted 6 or more semester hours of work and has a quality-point index of 1.00 or below is suspended.

A student who is subject to probation for the third time, whether successive or after an interval, is suspended.

A student suspended for poor scholarship cannot register for courses even as an auditor. He may apply for readmission after the lapse of either the fall or the spring semester. He must then submit evidence to the Committee on Scholarship that he is better qualified to pursue college work. A student suspended twice for poor scholarship will not be readmitted.

Graduate Suspension.—A student who has attempted 6 or more semester hours of work and whose cumulative quality-point index is below 2.50 is suspended.

READMISSION†

A student who withdraws, is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return. Complete and official transcripts from each institution the student has attended since making his previous application must be sent to the appropriate office at this University before his application for readmission can be evaluated.

CHANGES IN PROGRAM OF STUDIES

DROPPING A COURSE OFF CAMPUS

A course may be dropped without academic penalty during the first third of the semester. Withdrawing from a course without academic penalty after the first third of the semester requires approval of a written request, which should be addressed to the Dean of the College of General Studies.

Procedure for dropping courses.—An Off-campus drop slip (obtainable from the instructor, Field Representative, or the College of General Studies) must

* For Financial Suspension see "Payment of Fees," pages 11-12.

† When there are curriculum changes in graduate programs, the readmitted student may be required to take additional course work in preparation for the Master's Comprehensive Examinations.

be completed, signed and dated by the instructor, and submitted to the College of General Studies.

Failure to follow the proper procedure will result in an automatic grade of F and, regardless of the time of discontinuance, will not relieve the student of financial responsibility for the entire course.

DROPPING A CAMPUS COURSE

A *Campus drop slip* (available at the Office of the Registrar) must be completed, signed and dated by the instructor, and submitted to the Office of Student Records, College of General Studies.

Withdrawal between the last working day* in October and the end of the fall semester and between the last working day* in February and the end of the spring semester is permitted only in exceptional cases.

All charges for courses dropped without the approval of the dean must be met by the student. Reporting the dropping of a course to an instructor does not constitute an official withdrawal.

TRANSFER WITHIN THE UNIVERSITY

Transfer of residence to the College of General Studies, as a degree candidate, from another college, school, or division of the University may be made only with the approval of the deans concerned. Applications for transfer are available at the University's Office of Admissions or at the office of the appropriate dean. Upon transfer the student should consult his faculty adviser as to the requirements he must fulfill.

A maximum of 90 semester hours is transferrable toward a Bachelor's degree, 18 toward a Master's degree. Students transferring within the University are advised to note the residence requirements of the degree sought.

CREDIT

Credit toward a degree is given only after registration for and satisfactory completion of the required work of courses in the University, or upon the granting of advanced standing in accordance with the regulations of the College.

For transfer from credit to audit status, see page 9.

BALANCE SHEET

On request, the Registrar will issue to undergraduate degree candidates a balance sheet showing the amount of work completed and the requirements remaining to be met for the degree. A second balance sheet will be issued only in the event the student changes major or degree objectives.

TRANSCRIPTS OF RECORD

Official transcripts of student records will be issued on request of the student or former student. A fee of one dollar is charged for each transcript. No cer-

*The University work week is Monday through Friday, inclusive.

tificate of work done will be issued for a person who does not have a clear financial record.

CONTINUOUS REGISTRATION

Degree candidates are expected to maintain continuous registration until all degree requirements are satisfied. Students who have completed course registration (including the thesis) must maintain continuous registration by paying the "continuous registration" fee (see page 10). By failing to register for one semester or more, the student breaks his registration and must be readmitted (see "Readmission," page 16). A "Readmitted Student" is required to satisfy the curriculum requirements existing at the time of his readmission. The maintaining of continuous registration normally is limited to a period of one year.

Students must be registered during the summer if they elect to take courses, are taking required examinations, are receiving guidance toward theses, or are expecting to graduate at the end of the Summer Sessions.

MILITARY LEAVE

A student called to active duty may be granted military leave for the period of active duty, upon presentation to his dean of a copy of his orders and a petition for such leave. The maintenance of "continuous registration" is not required of the student on military leave; however, he must apply for readmission to the University well in advance of the semester in which he expects to return. If a student is granted military leave before he completes a semester for which he has paid all or part of his tuition, this payment will be credited to his account for use upon his return to the University. In no case will tuition be refunded to a student granted military leave.

A degree candidate who is a member of the Armed Forces and is transferred to the Far East for service connected with the Vietnam conflict will be granted military leave for the period of that service, upon presentation to his dean of a copy of his orders and a petition for such leave.

GRADUATION REQUIREMENTS

To be recommended for graduation a student must have met the admission requirements of his college or school; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered; and be free from all indebtedness to the University. Registration, either for course work or on the "continuous registration" fee basis, is required for the semester or summer session immediately preceding the awarding of the degree. For the Military Cooperative programs, which are on a different academic year schedule, registration in the last semester of the academic year of the program fulfills this requirement.

Application for Graduation.—An "Application for Graduation" form must be filed and the appropriate fee paid at the time of registration for the last semester or summer session of the senior or final year. Students completing degree requirements during the Summer Sessions will be awarded diplomas (no formal convocation) September 30, provided they have completed all degree requirements and have applied for graduation as a part of registration for the Summer Sessions.

Scholarship.—Candidates for the Bachelor's degrees must have a general quality-point index of 2.00 and a quality-point index of 2.50 in the concentration. An average of *B* or better is required for the Master's degree (see page 34).

Curriculum.—See the requirements for the degree concerned.

Residence.—A student is "in residence" only when registered for course work after making application for admission to degree candidacy or for the 15 semester hours undertaken to qualify for degree candidacy (see the specific residence requirements for the degree concerned).

With the permission of the appropriate dean, a student may be granted leave of absence; such student should, however, remain technically in residence by paying the continuous registration fee for each semester he is absent. For the purpose of this regulation, the summer session is disregarded.

By special arrangement, service personnel who receive military transfers when they are within 6 hours of a degree may be permitted to complete their work elsewhere, transfer these credits to the College of General Studies, and receive a degree from this University. This procedure does not apply to Master's candidates who have been granted 6 hours of transferred credit or have not completed the required courses.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Thesis.—A thesis, submitted in partial satisfaction of requirements for the Master's degree, must be submitted in its final form to the appropriate dean no later than the date specified in the calendar. Two complete copies of each thesis are required. It is the responsibility of the candidate for a graduate degree to obtain from the College of General Studies a printed copy of the regulations governing the styling and reproduction of the thesis. These regulations are rigidly enforced (see pages 34–35).

Accepted theses, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the dean.

HONORS

Dean's List.—To be eligible for inclusion on the Dean's List, a student must be a candidate for an undergraduate degree in the College of General Studies. Course work taken while the application for admission is being processed will be computed in determining eligibility for the Dean's List. A full-time degree candidate must have a minimum quality-point index of 3.50 for the semester concerned; a part-time degree candidate must have a quality-point index of 3.50 on the last 12 semester hours of work and must have maintained continuous registration for at least one three-hour course during the period concerned. Eligibility for inclusion again will be determined on the basis of the subsequent 12 semester hours of work.

With Distinction.—The undergraduate degrees may be conferred "With Distinction," at the discretion of the Dean's Council of the College and the Committee on Scholarship, if a student attains a quality-point index of 3.50 or higher on all work taken at this University. To be eligible for this honor a stu-

dent must have completed at this institution at least one-half of the course work required for the degree.

Special Honors.—Special Honors may be awarded to any member of the graduating class for outstanding achievement in the student's concentration of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for Special Honors approved by the faculty member representing the major department or concentration no later than the beginning of the senior year.
2. The student must meet such other conditions as may be set at the time his candidacy is approved.
3. No student will be awarded Special Honors unless he has a quality-point index of at least 3.00 on all work taken at this institution.
4. To be eligible for honors a student must have completed at this institution at least one-half of the academic course work required for the degree.

DISHONESTY

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be cancelled. If such falsification is discovered after the student has established an academic record at the University, he may be subject to dismissal from the University. Such a student will be ineligible (except by special action of the Dean's Council) for subsequent registration in any unit of the University.

Academic dishonesty on the part of any student will result in a disciplinary grade of *F* for the course involved and also may, upon the recommendation of the Dean's Council, result in his suspension from the University for a stated period, at the end of which time he may petition for readmission. The disciplinary grade of "Failure—Academic Dishonesty" will be recorded for the course involved, and this grade will be employed in the computation of the quality-point index. A student so suspended shall be withdrawn from all other courses except those in which all work has been completed.

THE LIBRARY

A student registered in the College of General Studies is entitled to the reference use of the University Library. Its stacks are open, and all students are welcome to browse at their leisure. A library card is issued to each student.

The loan period for most books available for outside circulation is 30 days, nonrenewable except for graduate students. A fine of 25 cents is charged for each day a book is overdue. Any book which circulates is subject to recall by the Library at any time if needed for reserve or other use. Reserve books must be used in the reserve reading room when the Library is open, except that they may be withdrawn for overnight use beginning at 8:30 p.m. A fine of 50 cents is charged for each hour or fraction thereof that a reserve book is overdue. Grades of a student are withheld until his library record is clear.

The hours of the University Library are: Monday through Friday, 8:30 a.m. to 12 midnight; Saturday, 9 a.m. to 6 p.m.; Sunday, 1 p.m. to 12 midnight.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

RECENTLY ESTABLISHED REGULATIONS

An Appendix (pages 116-17) contains regulations recently approved by the University's Board of Trustees.

UNIVERSITY POLICY ON RELEASE OF STUDENT INFORMATION

In general, the policy of the University is one of attempting to keep the student's record confidential and out of the hands of those who would use it for other than legitimate reasons. At the same time, the policy must be flexible enough not to hinder the student, the University, or the community in their legitimate endeavors.

No information concerning a student will be released, except as noted below, unless required by court order or subpoena, or requested in writing by the student:

1. Information which is of public record, such as whether or not the student is currently enrolled; dates of attendance; whether or not he received a degree; current address and telephone number; the school or college in which he is enrolled.
2. The issuance of formal transcripts of record to recognized institutions of higher learning; the certification of academic achievement to the various recognized professional associations (law, medicine, engineering, education, etc.); and the inspection of records, under appropriate supervision, by properly validated representatives of government investigative agencies.

UNIVERSITY POLICY ON SELECTIVE SERVICE INFORMATION

The University notifies draft boards of a student's academic status only when the student requests or authorizes, in writing, that the draft board be notified. A Selective Service Information Card is put into the registration packet of each male student registered on campus, exclusive of those in the National Law Center and the School of Medicine. This card contains the following statement: By my signature below, I hereby authorize the University to notify my draft board of my academic status in the University, or of any changes in academic status that occur during this semester. If the student signs the card, the University then automatically notifies the draft board. If the student does not sign the card, no notification is sent. National Law Center students and students in the School of Medicine should check with the appropriate dean's office for details of the policy in their school.

Student Services

HONOR SOCIETY

Alpha Sigma Lambda.—A national honor society for part-time evening college and off-campus undergraduate degree students, the purpose of which is to recognize and to encourage scholarship and leadership among undergraduate degree candidates. Membership is limited to students who have been enrolled for four semesters or terms in the College of General Studies and have completed 30 semester hours of work toward a degree with a 3.50 average. The Alpha Alpha Chapter was established at George Washington University in 1965.

VETERANS EDUCATION

The Office of the Registrar, Luther Rice Hall, 2121 Eye Street, N.W., assists students entitled to educational benefits as veterans or war orphans with any problems which may arise concerning their benefits. This Office also processes certifications of enrollment and attendance to the Veterans Administration so that monthly allowances will be paid.

When feasible, students entitled to benefits as veterans or war orphans should consult the Office of the Registrar prior to submitting application to the Veterans Administration. All such students should obtain the instruction sheet issued by the Office of the Registrar, which sets forth requirements to be fulfilled before certification of enrollment can be made to the Veterans Administration, and which includes other information of general interest.

The Veterans Administration is at 2033 M Street, N.W., Washington, D.C. 20421.

STUDENT AND ALUMNI CAREER SERVICES OFFICE

The Student and Alumni Career Services Office, Woodhull House, 2033 G Street, N.W., provides assistance to degree-seeking students and alumni seeking full-time, part-time, temporary, or permanent employment. The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration. The Office administers the on-campus Industrial and Government Recruitment Interview Program for seniors and graduate students, in which private companies, government agencies, service organizations, public school systems, and universities participate. Prospective teachers may establish permanent credentials files in the Student and Alumni Career Services Office. This service includes files for alumni seeking college and university faculty and administrative positions. The Office also provides individual interviews for students and alumni wishing career guidance.

The Office is open from 9 a.m. to 5 p.m., Monday through Friday.

The Bachelor's Degrees

THE FACULTY of Columbian College of Arts and Sciences has academic jurisdiction over the degrees of Bachelor of General Studies with areas of concentration in history, mathematics, political science, and psychology; Bachelor of

Science in Environmental Health; Bachelor of Science in Geodetic and Cartographic Science; and Bachelor of Science in Oceanography. The Faculty of the School of Government and Business Administration has academic jurisdiction over the degree of Bachelor of Science in General Studies with areas of concentration in accounting and business administration. These off-campus programs are administered by the College of General Studies.

REQUIREMENTS FOR DEGREE CANDIDACY

Secondary school graduates applying for Bachelor's candidacy must present the combined evidence of (1) an acceptable certificate of graduation from an accredited secondary school, showing a minimum of fifteen "units"* in a college preparatory or academic curriculum; (2) the principal's statement that the applicant is adequately prepared to undertake college work with reasonable prospect of success; (3) College Entrance Examination Board scores on the Scholastic Aptitude Test and the English Composition Achievement Test (for students out of high school several years, other appropriate tests may be prescribed).

Mature students who do not meet these requirements may be considered for degree candidacy after the satisfactory completion of at least 15 semester hours of course work with a quality-point index of 2.50 or higher. This course work must include English 1 or 1x and 2, *English Composition*, and 9 semester hours of course work in at least two of the following areas: Humanities (literature, philosophy, foreign languages), Social Science (anthropology, economics, geography, history, political science, sociology), and Natural Science and Mathematical Sciences.

The selection of qualifying courses should be made in conference with the faculty adviser, and a conference concerning plans for study is required of each applicant for admission to candidacy.

ADVANCED STANDING

THROUGH TRANSFER FROM OTHER COLLEGES AND UNIVERSITIES

Properly certified courses taken at accredited colleges or universities may be applied toward a degree, subject to the curriculum requirements of the degree program for which admission is sought. Although a grade of *D* is not acceptable for transfer, it may be used to satisfy a curriculum requirement. It may not, however, be counted toward the total number of semester hours required for the degree, and it should not be repeated.

Transfer students whose previous academic records raise doubts of their ability to complete degree requirements successfully must complete 15 hours of course work in this College with a quality-point index of 2.50 or higher to be considered for degree candidacy. Courses taken to qualify for candidacy must be distributed over two or more of the following areas: Humanities (literature, philosophy, foreign language), Social Science (anthropology, economics, geography, history, political science, sociology), and Natural Science and Mathematics. (Students who have not successfully completed an acceptable college course in English Composition must include English 1 or 1x and 2.) Applicants who have been suspended for academic reasons from this University or another institution must fulfill this same 15-hour requirement and also obtain

* A unit represents a year's study in a secondary school subject, including in the aggregate no less than 120 sixty-minute periods, or the equivalent, of prepared classroom work.

written approval of a petition for admission to degree candidacy from the appropriate Committee on Admission and Advanced Standing.

The University reserves the right to refuse credit for transfer in whole or in part, or to allow it provisionally. Credit so given may be withdrawn for subsequent poor work.

It is the responsibility of the student to have an official transcript sent directly from each institution formerly attended to the Office of Admissions, George Washington University, Washington, D.C. 20006.

If the transcript from a higher institution includes the record of his secondary school work, it is not necessary for the applicant to have forwarded a separate record from the principal of the secondary school.

THROUGH SERVICE SCHOOLS, VALIDATING EXAMINATIONS, AND CORRESPONDENCE COURSES

In addition to credit allowed in transfer from other accredited colleges or universities, a maximum of 30 semester hours of advanced standing in this College may be obtained by any combination of the following methods.

Service Schools.—Except for those students enrolled as candidates for the Bachelor of Science in Geodetic and Cartographic Science or the Bachelor of Science in Oceanography degree, a maximum of 30 semester hours may be obtained on the basis of service schools satisfactorily completed, as evaluated in accordance with the "Guide to the Evaluation of Educational Experience in the Armed Forces." Ordinarily such subjects are counted as electives. No credit will be allowed for military experience as such.

Validating Examinations.—A maximum of 12 semester hours may be obtained by validating examinations. With the approval of the departmental adviser concerned, permission to take such examinations is granted those who are qualified by work experience and background. Validating examinations may be taken only once, and a grade of C or better is required for credit. The fee for each 3-hour course examination is \$94.

Correspondence Courses.—Except for those students enrolled as candidates for the Bachelor of Science in Geodetic and Cartographic Science or the Bachelor of Science in Oceanography degree, a maximum of 15 semester hours may be earned through the successful completion of correspondence courses of college level which are offered by the U.S. Armed Forces Institute or a regionally accredited college or university.

REQUIREMENTS FOR THE DEGREES

RESIDENCE

The last 30 semester hours, including at least 12 hours in the area of concentration, must be completed in residence as a candidate for the degree sought, unless special permission is granted by the appropriate dean to take work elsewhere. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work and the 15 hours taken in order to be considered for degree candidacy may be counted in residence, but in no case may the period of residence aggregate less than 30 weeks. For regulations governing military students who are transferred when they are within 6 semester hours of their degrees, see page 19.

Transfers.—Transfer students from other colleges or universities must complete satisfactorily at least 12 semester hours of the required work in their area of concentration in residence as a candidate for the degree sought.

SCHOLARSHIP

The system of grading and computing scholarship is described in detail on pages 14–15. For regulations concerning probation, suspension, and readmission, see pages 15–16.

To remain in good standing, a student must maintain a general quality-point index of 2.00 and a quality-point index of at least 2.50 in his area of concentration.

BACHELOR OF GENERAL STUDIES CURRICULUM

Faculty Adviser: Edson G. Hammer, College of General Studies. F-13; Telephone: 676-7016

The Bachelor of General Studies curriculum aims to provide the adult part-time student with the opportunity to obtain a broad education. For that reason the course work required in the first and second years is distributed among Communications (written and oral), the Humanities, Natural Science and Mathematical Sciences, and the Social Sciences. In choosing the third- and fourth-year course work required in departments related to their concentration, students should obtain counseling through the faculty adviser.

Students planning to work toward Master's degrees are advised to plan their Bachelor's programs so that they will meet the prerequisite requirements of the school or college of their choice. Students planning to enter graduate programs which require reading knowledge of a foreign language are advised to include two years of one foreign language in their Bachelor's program.

FIRST AND SECOND YEARS

| Communications | Semester Hours |
|----------------------------------|-------------------|
| English 1 or 1x, 2..... | 6 |
| English 11; Speech 111, 121..... | 6 |

Humanities*

| | |
|---|----|
| Humanities 1–2, 3–4 or Twelve semester hours selected from the following: Art 31–32, 71–72; English 41–42, 51–52, 71–72, 91–92; Foreign Language (2 years of one language); Music 3, 4; Philosophy 51–52; Religion 9, 10, 59–60; Slavic 91–92 | 12 |
|---|----|

Natural Science

| | |
|---|-----|
| Six to eight semester hours selected from the following: Biological Sciences 3–4, 11–12; Chemistry 3–4; Geology 1–2, 3, 4; Physics 1, 2, 9–10.... | 6–8 |
|---|-----|

* Students who plan to continue study for advanced degrees are urged to fulfill the 2-year language requirement.

Mathematics

| | |
|--|----------------------------|
| Six semester hours selected from the following: Mathematics 3, 6, 9, 10, 30, 31; Statistics 51, 52, 101-2..... | Semester Hours 6 |
|--|----------------------------|

Social Sciences

| | |
|---|----|
| One full-year course in any two departments selected from the following: Anthropology 1-2; Economics 1-2; Geography 51 and 52; History 39-40, 71-72; Political Science 5-6; Psychology 1 and 8, 1 and 22, 1 and 29; Sociology 1-2 | 12 |
|---|----|

| | |
|---|-------|
| Elective (depending on science option)..... | 10-12 |
| | 80 |

THIRD AND FOURTH YEARS

Concentrations are offered in History, Mathematics, Political Science, and Psychology.

Concentration Requirements (to be selected in consultation with the faculty adviser):

| | |
|---|-----|
| 100-level courses in the department of the selected area of concentration.... | 24* |
| 100-level courses in two or more related departments..... | 18* |

| | |
|----------------|-----|
| Elective | 18 |
| Total | 120 |

BACHELOR OF SCIENCE IN GENERAL STUDIES CURRICULUM

Faculty Adviser: Edson G. Hammer, College of General Studies. F-13; Telephone: 676-7016

The Bachelor of Science in General Studies curriculum aims to provide the adult part-time student with the opportunity to obtain a broad education. For that reason the course work required in the first and second years is distributed among Communications (written and oral), the Humanities, Natural Science and Mathematical Sciences, and the Social Sciences. In choosing the third- and fourth-year course work required in departments related to their concentration, students should obtain counseling through the faculty adviser.

Students planning to work toward Master's degrees are advised to plan their Bachelor's programs so that they will meet the prerequisite requirements of the school or college of their choice.

FIRST AND SECOND YEARS**Communications**

| | |
|----------------------------------|------------------------|
| English 1 or 1x, 2..... | Semester Hours 6 |
| English 11; Speech 111, 121..... | 6 |

* Students selecting psychology as an area of concentration are required to take 18 semester hours of 100-level Psychology courses and 24 semester hours of 100-level courses in two or more related departments.

| Humanities | Semester Hours |
|---|-------------------|
| Humanities 1-2, 3-4 or Twelve semester hours selected from the following: Art 31-32, 71-72; English 41-42, 51-52, 71-72, 91-92; Foreign Language (2 years of one language); Music 3, 4; Philosophy 51-52; Religion 9, 10, 59-60; Slavic 91-92 | 12 |
| Natural Science and Mathematical Sciences | |
| Six to eight semester hours selected from the following: Biological Sciences 3-4; Chemistry 3-4; Geology 1-2, 3, 4; Physics 1, 2, 9-10..... | 6-8 |
| Six semester hours selected from the following: Business Administration 118 and 119 or 120; Mathematics 3, 6, 9, 10, 30, 31; Statistics 51, 52, 101-2 | 6 |
| Social Sciences | |
| One full-year course in any two departments selected from the following: Anthropology 1-2; Economics 1-2; Geography 51 and 52; History 39-40, 71-72; Political Science 5-6; Psychology 1 and 8, 1 and 22, 1 and 29; Sociology 1-2 | 12 |
| Elective (depending on option)..... | 10-12 |
| | <hr/> 60 |
| THIRD AND FOURTH YEARS | |
| Concentrations are offered in Accounting and Business Administration. | |
| Concentration Requirements (to be selected in consultation with the faculty adviser): | |
| 100-level courses in the department of the selected area of concentration.... | 24 |
| 100-level courses in two or more related departments..... | 18 |
| Elective | 18 |
| Total | <hr/> 120 |

BACHELOR OF SCIENCE IN GEODETIC AND CARTOGRAPHIC SCIENCE

Faculty Adviser: Hyman Orlin, Professorial Lecturer in Mathematics. Telephone: 496-8720. Counseling by appointment only, telephone: 676-7013.

Only a portion of the course work in this four-year curriculum is offered on campus. The Cartography, Geodesy, Geophysics, and Oceanography courses are given at the Environmental Science Services Administration, the Naval Oceanographic Office, and the U.S. Army Topographic Command, which have the necessary laboratory facilities. Since these installations are some distance from the campus, students should plan to provide their own transportation. Entrance requirements are stated on pages 23-24; residence requirements are stated on pages 24-25.

ADVANCED STANDING

Twelve semester hours of credit may be granted upon the successful completion of validating examinations. *Note that no credit will be given for courses taken in correspondence schools or service schools.*

SCHOLARSHIP

The system of grading and computing scholarship is described in detail on pages 14-15. For regulations regarding probation, suspension, and readmission see pages 15-16.

To remain in good standing a student must maintain a general quality-point index of 2.00 and a quality-point index of at least 2.50 in courses from one of the two areas of concentration: (1) *Cartography*—Cartography 107, 108, 111, 112, Geodesy 13, 110; (2) *Geodesy*—Geodesy 13, 110, 155, 156, 160, Geophysics 105.

CURRICULUM

| | | Semester Hours |
|-----------------------------|--|-------------------|
| <i>Required—First Year</i> | | |
| Engl 1, 2: | English Composition | 6 |
| Geog 51: | Introduction to Geography..... | 3 |
| *Geog 52: | World Regions | 3 |
| Math 30: | Precalculus | 3 |
| Math 31: | Calculus of One Variable..... | 4 |
| Phys 1: | General Physics | 4 |
| Phys 30: | Introductory Modern Physics | 4 |
| Social Sciences: | To be selected from the following..... | 8 |
| Anth 1-2: | Introductory Anthropology | |
| Econ 1-2: | Principles of Economics | |
| Hist 39-40: | European Civilization in Its World Context | |
| P Sc 5-6: | Introduction to Political Science | |
| Soc 1-2: | Introductory Sociology | |
| Total..... | | 32 |
| <i>Required—Second Year</i> | | |
| Cart 1-2: | Introduction to Cartography..... | 6 |
| Chem 11-12: | General Chemistry | 8 |
| Engl 51-52: | Introduction to English Literature, or | |
| Engl 71-72: | Introduction to American Literature..... | 6 |
| Geol 1 or 3: | Introductory Geology..... | 3 |
| Math 32: | Calculus of Several Variables..... | 3 |
| Math 33: | Calculus of Vector Functions..... | 3 |
| Stat 107: | Statistics for Engineers | 3 |
| Total..... | | 32 |

* Required for Cartography option; an elective may be substituted for Geodesy option.

Required—Third Year

| | Semester Hours |
|---|-------------------|
| Cart 107: Geomorphology | 3 |
| Cart 108: Climatology | 3 |
| Geod 12: Plane Surveying | 3 |
| Geod 13: Geodetic Surveying | 3 |
| Geod 110: Map Projections | 3 |
| Geop 105: Elementary Geophysics | 3 |
| Math 111: Mathematics for Engineers and Physicists I | 3 |
| Math 112: Mathematics for Engineers and Physicists II | 3 |
| Ocea 101-2: Elementary Oceanography | 6 |
| Total | 30 |

Group Options

Two areas of specialization are open to students in this program; students select one at the beginning of the fourth year.

*Required—Fourth Year***GROUP I: CARTOGRAPHY**

| | |
|--|----|
| Cart 111: Cartographic Techniques | 3 |
| Cart 112: Advanced Cartography | 3 |
| Geod 17: Elementary Photogrammetry | 3 |
| Geod 18: Intermediate Photogrammetry | 3 |
| Elective: Selected from the following in consultation with the adviser | 14 |
| Total | 26 |

GROUP II: GEODESY

| | |
|--|----|
| Geod 17: Elementary Photogrammetry | 3 |
| Geod 18: Intermediate Photogrammetry | 3 |
| Geod 155: Elementary Geodesy | 3 |
| Geod 156: Geodetic Astronomy | 3 |
| Geod 160: Mathematics of Adjustments and Least Squares | 3 |
| Elective: Selected from the following in consultation with the adviser | 11 |
| Total | 26 |

Electives*

Recommended electives may be selected from the following:

- Cart 103-4: Photo Interpretation
- Geod 117: Advanced Photogrammetry
- Geod 161: Adjustments in Geodesy and Photogrammetry
- Geol 141: Introductory Geochemistry
- Geop 106: Interpretation Theory—Geophysics
- Geop 115: Elementary Seismology
- Math 124: Introduction to Matrix Theory
- Math 134: Introduction to Boundary Value Problems

*In addition to the recommended electives, students should include one of the following courses:
Art 31-32, 71-72; Music 3, 4; Philosophy 51-52; Religion 9, 10, 21, 59-60.

Ocea 111: Ocean Waves and Tides
 Phys 161: Mechanics I
 Phys 162: Mechanics II
 Phys 163: Optics

BACHELOR OF SCIENCE IN OCEANOGRAPHY

Faculty Adviser: Hyman Orlin, Professorial Lecturer in Mathematics. Telephone: 496-8720. Counseling by appointment only, telephone: 676-7013.

Only a portion of the course work in this four-year curriculum is offered on campus. The Cartography, Geodesy, Geophysics, and Oceanography courses are given at the Environmental Science Services Administration, the Naval Oceanographic Office, and the U.S. Army Topographic Command, which have the necessary laboratory facilities. Since these installations are some distance from the campus, students should plan to provide their own transportation.

Entrance requirements are stated on pages 23-24; residence requirements are stated on pages 24-25.

ADVANCED STANDING

Twelve semester hours of credit may be granted upon the successful completion of validating examinations. *Note that no credit will be given for courses taken in correspondence schools or service schools.*

SCHOLARSHIP

The system of grading and computing scholarship is described in detail on pages 14-15. For regulations regarding probation, suspension, and readmission, see pages 15-16.

To remain in good standing a student must maintain a general quality-point index of 2.00 and a quality-point index of at least 2.50 in required area courses—Geology 125; Geophysics 105; and Oceanography 101-2, 110, 112.

CURRICULUM

| | Semester Hours |
|---|-------------------|
| <i>Required—First Year</i> | |
| Engl 1, 2: English Composition | 6 |
| Math 30: Precalculus | 3 |
| Math 31: Calculus of One Variable..... | 3 |
| Phys 1: General Physics | 4 |
| Phys 30: Introductory Modern Physics..... | 4 |
| Social Sciences: To be selected from the following..... | 6 |
| Anth 1-2: Introductory Anthropology | |
| Econ 1-2: Principles of Economics | |
| Hist 39-40: European Civilization in Its World Context | |
| P Sc 5-6: Introduction to Political Science | |
| Soc 1-2: Introductory Sociology | |
| Elective: To be selected from the following..... | 6 |
| Art 31-32: Survey of Western Art | |
| Art 71-72: Introduction to the Arts in America | |
| Mus 3: Introduction to Music | |
| Mus 4: Survey of Music Literature | |
| Phil 51-52: Introduction to Philosophy | |

THE BACHELOR'S DEGREES 31

| | Semester Hours |
|---|-------------------|
| Rel 9: The Old Testament | |
| Rel 10: The New Testament | |
| Rel 21: Introduction to Religious Thought | |
| Rel 59-60: History of Religions | |

Total..... 32

Required—Second Year

| | |
|--|---|
| Cart 1-2: Introduction to Cartography | 6 |
| Chem 11-12: General Chemistry | 8 |
| Engl 51-52: Introduction to English Literature, or | |
| Engl 71-72: Introduction to American Literature..... | 6 |
| Geol 1 or 3: Introductory Geology..... | 3 |
| Geol 2 or 4: Introductory Geology | 3 |
| Math 32: Calculus of Several Variables..... | 3 |
| Math 33: Calculus of Vector Functions | 3 |

Total..... 32

Required—Third Year

| | |
|--|---|
| Cart 107: Geomorphology | 3 |
| Cart 108: Climatology | 3 |
| Geod 12: Plane Surveying..... | 3 |
| Geop 105: Elementary Geophysics | 3 |
| Math 111: Mathematics for Engineers and Physicists I..... | 3 |
| Math 112: Mathematics for Engineers and Physicists II..... | 3 |
| Ocea 101-2: Elementary Oceanography | 6 |
| Stat 107: Statistics for Engineers..... | 3 |
| Elective: | 3 |

Total..... 30

Required—Fourth Year

| | |
|--|----|
| Geol 125: Marine Geology | 3 |
| Ocea 110: Ocean Dynamics | 3 |
| Ocea 112: Biological Oceanography | 3 |
| Ocea 113: Marine Geophysics..... | 3 |
| *Elective: May be selected from the following..... | 14 |
| Geol 141: Introductory Geochemistry | |
| Geop 106: Interpretation Theory—Geophysics | |
| Geop 115: Elementary Seismology | |
| Math 124: Introduction to Matrix Theory | |
| Math 134: Introduction to Boundary Value Problems | |
| Ocea 111: Ocean Waves and Tides | |
| Ocea 114: Chemical Oceanography | |
| Phys 161: Mechanics I | |
| Phys 162: Mechanics II | |
| Phys 163: Optics | |

Total..... 26

* With the consent of the adviser, courses in Chemistry and additional courses in Geology and Physics may be selected.

BACHELOR OF SCIENCE IN ENVIRONMENTAL HEALTH CURRICULUM

Faculty Advisers: First two years—Edson G. Hammer, College of General Studies, F113; Telephone 676-7016. Third and fourth years—J. W. Millar, Vivian Gill Professor of Epidemiology and Environmental Health, School of Medicine. Telephone 331-6117.

The Bachelor of Science in Environmental Health curriculum is designed to provide students with the requisite training to function effectively as Environmental Health Officers in domestic and foreign areas. Candidates are prepared for participation in community or regional program planning, community education, staff personnel training, and supervision in official or voluntary health organizations.

Entrance requirements are stated on pages 23-24; residence requirements on pages 24-25.

The determination of acceptability of a student to the program leading to the degree of Bachelor of Science in Environmental Health will be made by the faculty advisers appointed by the Department of Epidemiology and Environmental Health and Columbian College of Arts and Sciences. The decision to accept a student must be unanimous.

The Department of Epidemiology and Environmental Health offers 6 semester hours of first-group courses and 35 semester hours of second-group courses which comprise the area of major concentration. The remaining course work is taken in Columbian College of Arts and Sciences. The degree is granted by Columbian College of Arts and Sciences and is administered by the College of General Studies.

FIRST AND SECOND YEARS

| | Semester Hours |
|---|-------------------|
| Communications | |
| English 1 or 1x, 2 | 6 |
| English 11; Speech 111, 121 | 6 |
| Humanities | |
| Humanities 1-2, 3-4 | |
| or | |
| Twelve semester hours selected from the following: English 41-42, 51-52, 71-72, 91-92; Foreign Language (2 years of one language); Philosophy 51-52 | 12 |
| Natural Science | |
| Biological Sciences 11-12, Chemistry 11-12 | 16 |
| Mathematics | |
| Six semester hours selected from the following: Mathematics 3, 6, 9, 10, 30, 31; Statistics 51-52, 101-2 | 6 |
| Social Sciences | |
| A full-year course in one department selected from the following: Anthropology 1-2; Economics 1-2; Psychology 1 and 8, 1 and 22; Sociology 1-2 | 6 |

MASTER OF SCIENCE IN ADMINISTRATION 33

| | Semester Hours |
|--|-------------------|
| *Elective (Epidemiology and Environmental Health 1, 2, and 3 recommended) | 8 |
| | <hr/> |
| THIRD AND FOURTH YEARS | 60 |
| Environmental Sanitation | |
| Epidemiology and Environmental Health 101, 102, 103, 104 | 8 |
| Preventive Medicine and Environmental Health | |
| Epidemiology and Environmental Health 121, 122, 123, 131 | 7 |
| Public Health Entomology | |
| Epidemiology and Environmental Health 141, 142, 143, 144 | 6 |
| Public Health Microbiology | |
| Epidemiology and Environmental Health 151, 152, 153, 154 | 8 |
| Environmental and Occupational Health | |
| Epidemiology and Environmental Health 171, 172 | 4 |
| Public Health Administration | |
| Epidemiology and Environmental Health 191, 192 | 2 |
| Elective | |
| 100-level courses in two or more related departments in consultation with the faculty adviser, selected from Anthropology, Biological Sciences, Chemistry, Geology, Psychology, and Sociology..... | 25 |
| Total..... | <hr/> 120 |

Master of Science in Administration†

THE SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION has academic jurisdiction over the degree of Master of Science in Administration. This degree program provides a course of study appropriate for those students currently working in government or industry. It is a professional degree, preparing graduates for positions of higher and broader responsibility and generally improving their competence as administrators. Students expecting to continue in a doctoral program should consult the Committee on Doctoral Studies in the School of Government and Business Administration concerning appropriate electives.

The University cannot guarantee that all courses in this curriculum will be offered at every off-campus center. However, any student who has been admitted to degree candidacy may arrange to complete his curriculum by registering on campus.

REQUIREMENTS FOR ADMISSION TO MASTER'S CANDIDACY

Application for Master's candidacy *must* be made before or immediately after starting course work. No more than 6 semester hours of credit toward the de-

* Electives selected with the approval of the adviser.
 † Not open to students in the Military Cooperative Programs

gree will be granted for work taken in nondegree status (before application and while the application is being processed).

The general requirement for Master's candidacy is a Bachelor's degree from a regionally accredited college or university with an over-all quality-point index of 3.00 (a *B* average), adequate undergraduate preparation for the chosen graduate field, and satisfactory performance on the Admission Test for Graduate Study in Business*. Students with below *B* undergraduate averages may qualify by their scores on the Admission Test for Graduate Study in Business. Students who lack the necessary undergraduate background for the chosen graduate field may qualify by earning a *B* or better in prescribed undergraduate courses.

The Admission Test for Graduate Study in Business must be taken prior to application for degree candidacy or during the semester in which application is made. For information concerning the date and place for taking the test, contact the Educational Testing Service, Box 955, Princeton, N.J. 08540.

ADVANCED STANDING

A maximum of 6 semester hours of advanced standing may be credited toward the degree by transfer of credit for approved graduate work taken at an accredited college or university.

Students who are not certain that they will be in this area long enough to complete the degree requirements should be aware that most institutions will accept only 6 hours of transfer credit toward a Master's degree.

REQUIREMENTS FOR THE DEGREES

RESIDENCE

A minimum of 24 semester hours of graduate work must be completed while registered as a degree candidate in this off-campus program.

The thesis and thesis seminar (6 semester hours) may be included in the 24 hours of course work taken in residence. A graduate student who transfers from another division of the University is required to have a minimum of 12 hours of course work as a degree candidate in this off-campus program.

SCHOLARSHIP

An average of *B* or better is required for the Master's degree. For details, see pages 14-16. A student whose scholarship is unsatisfactory may be suspended.

THESIS

With the approval of the adviser, a thesis may be substituted for the 6 semester hours of elective credit.

The thesis subject and the thesis in its final form must be approved by the director of the thesis and the faculty adviser and presented to the dean no later than the date announced in the calendar. Printed copies of detailed regulations

* This is a test of general aptitude and does not presume an undergraduate major in Business Administration.

regarding the form and reproduction of the thesis are available at the Office of Counseling and Student Records, College of General Studies.

Payment of tuition for the thesis entitles the candidate, during the two semesters he registers for thesis (299-300), to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year is granted without further tuition payment. The student must, however, maintain continuous registration during this period. If the preparation of the thesis extends more than three semesters beyond the date the student registers for thesis 300, he must register for the entire 6 hours of thesis again and pay tuition as for a repeated course.

COURSE SUBSTITUTION

It is the responsibility of the student to get written approval from the faculty adviser prior to registration for any course substitution. Forms for requesting substitution are available at the Office of Counseling and Student Records, College of General Studies.

MASTER'S COMPREHENSIVE EXAMINATION

The Master's candidate is required to pass a written Master's Comprehensive Examination. Before applying for the examination, the student must complete the required courses, all of the courses in his area of concentration, and any prerequisite courses specified in his admission letter; and he must have maintained a 3.00 (B) average. In writing the examination, the student is expected to correlate what he has learned in his course work and his reading in the literature of the field. The examinations are conducted at the University in December for students graduating in February and in April for students graduating in June.

REQUIRED COURSES

| | Semester Hours |
|---|-------------------|
| B&PA 201: Advanced Administrative Management..... | 3 |
| *B&PA 204: Quantitative Factors in Administration..... | 3 |
| B&PA 207: Human Behavior in Organizations..... | 3 |
| B&PA 263: Organization and Management..... | 3 |
| B&PA 287: Relations of Government to Business..... | 3 |
| Total..... | 15 |
| †Area of Concentration: | 15 |
| Elective: To be selected with the approval of the adviser, or | |
| Thesis: (B Ad 299-300 or P Ad 299-300) | 6 |
| Total..... | 36 |

* B&PA 204 is waived for students electing Management Science-Operations Research as an area of concentration.
† Eighteen semester hours are required in Management Science-Operations Research area of concentration.

Areas of Concentration**I. AUTOMATIC DATA PROCESSING**

Faculty Adviser: John Francis McCarthy, Jr., Associate Professor of Business Administration. Room 202, 2129 G Street, N.W.; Telephone: 676-7089

This area of concentration provides a broad understanding of the principles of manual, mechanical, and electronic data processing, including computer programming concepts, methods, and languages; an appreciation of the capabilities and the limitations of data processing equipment; a knowledge of the phases of management information systems development; and an understanding of management's role in data processing. It provides an appreciation of the role of data processing as a tool of management.

| | Semester Hours |
|--|-------------------|
| B&PA 218: Survey of Data Processing..... | 3 |
| B&PA 219: Digital Computer Programming Concepts..... | 3 |
| B&PA 220: Comparative Digital Computer Systems and Their Management | 3 |
| B&PA 221: Management Information Systems Development and Application | 3 |
| B&PA 223: Management of a Data Processing Organization..... | 3 |
| Total..... | 15 |

II. BUSINESS FINANCIAL MANAGEMENT

Faculty Adviser: Edward Joseph Mock, Associate Professor of Business Finance. Building Y, Room 10, 2131 G Street, N.W.; Telephone: 676-6893

This area of concentration provides a background in business budgeting, controllership, treasury, long-range planning, reporting, and financial management processes. Courses are designed to emphasize the planning, analysis, implementation, and controls necessary for making effective financial decisions.

| | Semester Hours |
|--|-------------------|
| Acct 215: Survey of Managerial Accounting..... | 3 |
| Acct 276: Management Planning and Control..... | 3 |
| B Ad 231: Financial Decision Making..... | 3 |
| B Ad 232: Seminar: Capital Resources Management..... | 3 |
| B Ad 233: Seminar: International Business Finance..... | 3 |
| Total..... | 15 |

III. BUSINESS MANAGEMENT

Faculty Adviser: George Frederick Conner, Assistant Professor of Business Administration. Government 401; Telephone 676-7097

This area of concentration, with its prerequisites, provides the essentials of business administration with emphasis upon managing the finance, production, marketing, and accounting functions of a business firm. These functions are integrated in a final course using actual business cases.

PREREQUISITE

Nine semester hours in Mathematics, 6 semester hours in Economics, and 3 semester hours each in Accounting, Business Administration, and Statistics

| | Semester Hours |
|--|-------------------|
| Acct 215: Survey of Managerial Accounting..... | 3 |
| B Ad 225: Seminar: Manufacturing Production..... | 3 |
| B Ad 231: Financial Decision Making..... | 3 |
| B Ad 241: Advanced Marketing Management..... | 3 |
| B Ad 297: Case Studies in Business Administration..... | 3 |
| Total..... | 15 |

IV. GOVERNMENTAL ADMINISTRATION

Faculty Adviser: Daniel Raymond Cloutier, Professor of Public Administration. Government 310; Telephone: 676-6064

This area of concentration emphasizes policy formulation and administration in government. It provides the broad dimensions of public administration for those preparing for managerial responsibility in the public service.

| | Semester Hours |
|---|-------------------|
| P Ad 213: Administration in Government..... | 3 |
| P Ad 231: Public Personnel Administration..... | 3 |
| P Ad 251: Governmental Budgeting..... | 3 |
| P Ad 252: Problems in Planning, Programming, and Budgeting..... | 3 |
| P Ad 260: Seminar: Policy Formulation and Administration..... | 3 |
| Total..... | 15 |

V. INDUSTRIAL PERSONNEL MANAGEMENT

Faculty Adviser: Joe Lee Jessup, Professor of Business Administration. Government 312; Telephone: 676-6068

This area of concentration provides a basic academic and professional foundation, equipping the student for administrative responsibility in industrial personnel management. The courses cover the fields of personnel management, industrial relations, unionism, collective bargaining, labor relations, and manpower development and utilization.

| | Semester Hours |
|---|-------------------|
| B Ad 208: Personnel Management and Industrial Relations..... | 3 |
| B Ad 209: Seminar: Personnel Management..... | 3 |
| B Ad 212: Unionism and Collective Bargaining..... | 3 |
| B Ad 213: Current Issues in Unionism, Collective Bargaining, and Labor Relations..... | 3 |
| P Ad 233: Seminar: Manpower Development and Utilization..... | 3 |
| Total..... | 15 |

VI. INTERNATIONAL COMMERCE

Faculty Adviser: Phillip Donald Grub, Associate Professor of Business Administration. Government 201; Telephone: 676-6115

This area of concentration prepares students for careers in firms operating on a multinational basis or about to enter the international field; for careers in the federal government and in international agencies concerned with business, industry, and finance abroad; and for the Commerce option of the Foreign Service Officer Examination.

| | Semester Hours |
|--|-------------------|
| B Ad 233: Seminar: International Business Finance..... | 3 |
| B Ad 248: International Marketing..... | 3 |
| B Ad 255: Seminar: International Trade I..... | 3 |
| B Ad 256: Seminar: International Trade II..... | 3 |
| B Ad 257: Operation of the Multinational Firm | 3 |
| Total..... | 15 |

VII. MANAGEMENT ENGINEERING

Faculty Adviser: George Richard Allen, Associate Professor of Management. Room 405, 2129 G Street, N.W.; Telephone: 676-7184

This area of concentration provides a background for industrial management. Courses cover organization and functioning of industrial firms, and the management practice and problems of such firms.

| | Semester Hours |
|--|-------------------|
| B Ad 225: Seminar: Manufacturing Production..... | 3 |
| B Ad 229: Seminar: Administration of Research and Development..... | 3 |
| B Ad 280: Procurement and Contracting..... | 3 |
| B&PA 268: Management Engineering | 3 |
| Econ 217: Survey of Economics..... | 3 |
| Total..... | 15 |

VIII. MANAGEMENT SCIENCE-OPERATIONS RESEARCH*

Faculty Adviser: John Herbert Norton, Associate Professor of Business Administration. Building Y, Room 21, 2131 G Street, N.W.; Telephone: 676-7095

This area of concentration develops a thorough understanding of quantitative or mathematical approaches to problems of managerial control and decision making. While the program will develop a competent background in basic mathematical theory associated with the various techniques, the program is oriented towards applications of the techniques rather than their theoretical mathematical content.

| | Semester Hours |
|--|-------------------|
| B&PA 225: Introduction to Managerial Statistics..... | 3 |
| B&PA 226: Managerial Statistics..... | 3 |
| B&PA 227: Mathematical Programming: Techniques and Applications.. | 3 |
| B&PA 229: Seminar: Management Science and Operations Research..... | 3 |

* B&PA 204 Quantitative Factors in Administration is waived in this area of concentration.

| | | |
|---|-------------------|----|
| Other courses: To be selected from the following as approved by the adviser | Semester Hours | 6 |
| B Ad 261: Managerial Economics I | | |
| B Ad 262: Managerial Economics II | | |
| B Ad 295: Business Decision Simulation | | |
| B&PA 219: Digital Computer Programming Concepts | | |
| B&PA 220: Comparative Digital Computer Systems and Their Management | | |
| B&PA 228: Systems Analysis by Simulation | | |
| Total..... | | 18 |

IX. PROCUREMENT AND CONTRACTING

Faculty Adviser: Harry Robert Page, Professor of Business Administration. Room 302, 2129 G Street, N.W.; Telephone 676-7461

This area of concentration provides a basic academic and professional foundation, equipping the student for administrative responsibility in procurement and contracting. The courses cover industrial purchasing, procurement activities of the federal government, and contracting activities of vendors to the federal government.

| | | |
|---|-------------------|----|
| | Semester Hours | |
| B Ad 280: Procurement and Contracting..... | 3 | |
| B Ad 281: Purchasing Principles and Practices..... | 3 | |
| B Ad 282: Government Contract Administration..... | 3 | |
| B Ad 283: Pricing and Negotiation..... | 3 | |
| B Ad 285: Systems Procurement and Project Management..... | 3 | |
| Total..... | | 15 |

X. PUBLIC FINANCIAL MANAGEMENT AND BUDGETING

Faculty Adviser: Stephen Reed Chitwood, Assistant Professor of Public Administration. Government 308; Telephone: 676-7372

This area of concentration provides a broad foundation for work in governmental planning, programming, budgeting; and for controllership and related financial management activities. Its main stress is on financial processes and decision making in the public service.

| | | |
|---|-------------------|----|
| | Semester Hours | |
| Acct 215: Survey of Managerial Accounting..... | 3 | |
| Econ 218: Survey of Economics..... | 3 | |
| P Ad 213: Administration in Government..... | 3 | |
| P Ad 251: Governmental Budgeting..... | 3 | |
| P Ad 252: Problems in Planning, Programming, and Budgeting..... | 3 | |
| Total..... | | 15 |

XI. PUBLIC PERSONNEL MANAGEMENT

Faculty Adviser: Waldo Sommers, Professor of Public Administration. Government 1A; Telephone: 676-6792

This area of concentration provides a basic academic and professional foundation, equipping the student for administrative responsibility in public personnel management. The courses cover the federal administrative organization and process; principles, functions, and problems of personnel administration in the public service; unionism and collective bargaining; and manpower development and utilization.

| | Semester Hours |
|--|-------------------|
| B Ad 212: Unionism and Collective Bargaining..... | 3 |
| P Ad 213: Administration in Government..... | 3 |
| P Ad 231: Public Personnel Administration..... | 3 |
| P Ad 232: Problems in Public Personnel Management..... | 3 |
| P Ad 233: Seminar: Manpower Development and Utilization..... | 3 |
| Total..... | 15 |

XII. SYSTEMS MANAGEMENT

Faculty Adviser: Marvin Milton Wofsey, Associate Professor of Management. Room 403, 2129 G Street, N.W.; Telephone: 676-7183

This area of concentration provides a basic academic and professional foundation, equipping the student for administrative responsibility in computer-based systems. The courses cover computers, data processing, operations research, and the theory and management of systems.

| | Semester Hours |
|---|-------------------|
| *B Ad 295: Business Decision Simulation..... | 3 |
| B&PA 218: Survey of Data Processing..... | 3 |
| B&PA 220: Comparative Digital Computer Systems and Their Management | 3 |
| B&PA 223: Management of a Data Processing Organization..... | 3 |
| B&PA 224: Theory and Management of Systems..... | 3 |
| Total..... | 15 |

ELECTIVES

Unless a student elects to write a thesis, he selects 6 semester hours of electives, appropriate to his program, from graduate courses offered by the School of Government and Business Administration. To choose electives from other related departmental offerings in this University, the student must obtain the written approval of the faculty adviser. A form for this purpose may be obtained from the Office of Counseling and Student Records, College of General Studies.

* Offered on campus only.

Military Cooperative Programs

IN COOPERATION with the Industrial College of the Armed Forces, Fort McNair, Washington, D.C., a program of study is offered leading to the degree of Master of Science in Business Administration. The School of Government and Business Administration has academic jurisdiction over this program which is open only to current students and faculty of the Industrial College of the Armed Forces.

In cooperation with the National War College, Fort McNair, Washington, D.C.; and the Naval War College, Newport, R.I., a special program of study is offered leading to the degree of Master of Science in International Affairs. The School of Public and International Affairs has academic jurisdiction over this program which is open only to current War College students and faculty.

Robert Carter Burns, M.A., *Director, National War College Center, Fort McNair, Washington, D.C.*

Burton Malcolm Sapin, Ph.D., *Faculty Adviser, National War College, Fort McNair, Washington, D.C. and Naval War College, Newport, R.I.*

Clyde Bailey Sargent, Ph.D., *Director, Naval War College Center, Newport, R. I.*

Edwin Timbers, Ph.D., *Faculty Adviser, Industrial College of the Armed Forces, Fort McNair, Washington, D.C.*

Noncredit Programs

CONFERENCES, SEMINARS, AND INSTITUTES

THE COLLEGE OF GENERAL STUDIES presents a variety of conferences, seminars, and institutes designed to meet the needs of business, industry, and professional groups. Activities are scheduled on campus and at Airlie House Conference Center near Warrenton, Virginia.

For further information, consult Robert Carter Burns, M.A., Director of Special Programs, College of General Studies; Telephone 676-7049.

CREDIT-FREE PROGRAMS

In recognition of the impact of the increasing complexity and specialization of modern life, the College of General Studies sponsors noncredit programs designed to encourage continuing education throughout life.

Courses in the liberal arts are offered to widen the horizons of those who have been forced to specialize to meet the requirements of technical professions. Refresher courses are offered to help specialists keep abreast of rapid advancement of knowledge. Courses on writing, speaking, and modern languages provide opportunities for increasing skill in self-expression. Programs to develop leadership are planned in cooperation with organizations.

A regular program of noncredit courses without entrance requirements is offered each semester by the College. Informal off-campus and on-campus programs and courses of any desired length may be initiated at any time at the request of an interested group.

Information about entering or initiating courses in continuing education may be obtained from Jessie Edith Mullins, M.A., Director of Credit-free Courses. Telephone: 676-7047.

Continuing Education for Women

Director Ruth H. Osborn, M.A., Ed.D.

Assistants to the Director Elisabeth P. Clarkson, B.A.; Abbie O. Smith, M.A. in Ed.

Counselors Ruth N. Basom, M.N.; Lois Northrup, M.S.

DEVELOPING NEW HORIZONS FOR WOMEN

"DEVELOPING NEW HORIZONS FOR WOMEN" is offered each semester to assist women in developing their potential through understanding themselves as individuals and as women; gaining confidence in their abilities; and becoming acquainted with educational, occupational, and community service opportunities. This 15-week group guidance course includes lectures, group discussions, guest speakers, psychological tests, and individual counseling. Participants attend class on campus one day a week from 10 a.m. to 12 noon. There are no prerequisites. The fee for the course is \$65.

Most of the women attending these classes are homemakers who range in age from 21 to 60. Some of them have earned graduate or professional degrees, while some have no previous college education.

OFF-CAMPUS DAYTIME CREDIT COURSES

To enable women to combine their homemaking responsibilities with formal education, the College of General Studies offers 20 courses, for undergraduate or graduate credit, off campus each semester at convenient hours and locations for homemakers. Churches and community centers in Alexandria, Arlington, McLean, Springfield, and Falls Church, Virginia; Bethesda, Chevy Chase, Kensington, and Takoma Park, Maryland; as well as the District of Columbia, have provided classroom space.

Each credit course meets one day a week between 10 a.m. and 12:30 p.m. Members of the University faculty and others of recognized academic and professional competence are asked to teach in this program. Upon successful completion of off-campus credit courses, many women are encouraged to apply for degree candidacy at George Washington University. Some women transfer credits earned in these courses to colleges and universities in other parts of the United States.

INTRODUCTION TO SOCIAL WORK

This 15-week course is offered each semester to acquaint women with the social service structure of the metropolitan Washington area, the needs of people in an urban environment, opportunities for significant volunteer work, or subprofessional employment. Two hours of classroom work each week is supplemented

with weekly visits to social service agencies. This course is taught by a professional social worker, a member of the Academy of Certified Social Workers, who has had extensive experience in the United States and in Europe.

For further information about the programs in Continuing Education for Women, telephone 676-7036. Brochures describing courses will be mailed each semester.

INDEX OF OFF-CAMPUS CENTERS OF THE COLLEGE OF GENERAL STUDIES

| <i>Code Number</i> | <i>Installation</i> | <i>Page</i> |
|------------------------|--|-------------|
| 098 | Aberdeen Proving Ground, Md..... | 46 |
| 068 | Airlie House, Warrenton, Va..... | 41 |
| 003 | Alexandria Public Schools, Alexandria, Va..... | 46 |
| 085 | Andrews Air Force Base..... | 46 |
| 082 | Anne Arundel County Public Schools, Annapolis, Md..... | 46 |
| 004 | Arlington County Public Schools, Arlington, Va..... | 47 |
| 092 | Atlantic Research Corporation, Alexandria, Va..... | 47 |
| 091 | Bolling Air Force Base..... | 47 |
| 088 | Building T-7, Gravelly Point..... | 47 |
| 009 | Bureau of the Census..... | 47-48 |
| 025 | Bureau of Customs..... | 48 |
| 025 | Bureau of Domestic and International Business..... | 48 |
| 025 | Bureau of Narcotics and Dangerous Drugs..... | 48 |
| 010 | Bureau of Naval Personnel..... | 48 |
| 014 | Calvert County Public Schools, Prince Frederick, Md..... | 48 |
| 080 | Charles County Public Schools, LaPlata, Md..... | 48 |
| 025 | Civil Service Commission..... | 49 |
| 025 | Coast Guard..... | |
| 075 | College of General Studies coordinated courses..... | 42-43 |
| 076 | Continuing Education (credit courses)..... | 10, 18 |
| 072 | Continuous Registration..... | 49 |
| 025 | Department of Justice..... | 49 |
| 025 | Department of Labor..... | 49 |
| 019 | Department of State..... | 49 |
| 025 | Department of the Treasury, Bureau of Accounts..... | 50 |
| 025 | District of Columbia Government..... | 50 |
| 097 | Edgewood Arsenal, Md..... | |
| 095 | Education courses offered in cooperation with the District of Columbia Public Schools | 50 |
| 086 | Environmental Science Services Administration, Rockville, Md..... | 50 |
| 022 | Fairfax County Public Schools, Fairfax, Va..... | |

INDEX OF OFF-CAMPUS CENTERS 45

| Code Number | Installation | Page |
|----------------|--|-------|
| 025 | Federal Aviation Administration..... | 50 |
| 023 | Federal Bureau of Investigation..... | 51 |
| 025 | Federal Communications Commission..... | 51 |
| 024 | Federal Reserve System..... | 51 |
| 081 | Foreign Tours | |
| 026 | Fort Belvoir, Va..... | 51 |
| 028 | Fort Eustis, Va..... | 51 |
| 094 | Fort Lee, Va. | |
| 029 | Fort McNair, D.C..... | 51-52 |
| 030 | Fort George G. Meade, Md..... | 52 |
| 032 | Fort Monroe, Va..... | 52 |
| 031 | Fort Myer, Va..... | 52 |
| 086 | Gramax Building, Silver Spring, Md..... | 52-53 |
| 096 | Harford Junior College, Bel Air, Md..... | 53 |
| 034 | Industrial College of the Armed Forces, Fort McNair, D.C..... | 53 |
| 025 | Internal Revenue Service..... | 53 |
| 025 | Interstate Commerce Commission..... | 53 |
| 036 | Langley Air Force Base, Va..... | 53-54 |
| 087 | Linthicum Civic Association, Linthicum Heights, Md..... | 54 |
| 037 | Loudoun County Public Schools, Leesburg, Va..... | 54 |
| 038 | Main Navy Building..... | 54 |
| 039 | Melpar Incorporated, Falls Church, Va..... | 54 |
| 041 | Montgomery County Public Schools, Rockville, Md..... | 54 |
| 093 | NASSIF Building, Falls Church, Va..... | 54-55 |
| 042 | National Bureau of Standards Graduate School | 55 |
| 044 | National Naval Medical Center, Bethesda, Md..... | 55 |
| 045 | National Science Foundation..... | 55 |
| 046 | National Security Agency, Fort Meade, Md..... | 52 |
| 047 | National War College, Fort McNair, D.C..... | 56 |
| 049 | Naval Oceanographic Office, Suitland, Md..... | 56 |
| 050 | Naval Ordnance Station, Indian Head, Md..... | 56 |
| 018 | Naval Ship Research and Development Center, Carderock, Md..... | 56 |
| 048 | Naval Ship Research and Development Laboratory, Annapolis, Md. | 56 |
| 052 | Naval Supply Center, Norfolk, Va..... | 57 |
| 053 | Naval War College, Newport, R.I..... | 57 |
| 021 | Noncredit Courses..... | 41-42 |
| 025 | Patent Office | 57 |
| 055 | The Pentagon..... | 57 |
| 025 | Post Office Department..... | 58 |
| 056 | Prince Georges County Public Schools, Upper Marlboro, Md..... | 58 |
| 059 | St. Mary's County Public Schools, Leonardtown, Md..... | 58 |
| 058 | Social Security Administration, Baltimore, Md..... | 58 |
| 005 | U.S. Army Topographic Command, Corps of Engineers, D.C..... | 58 |
| 060 | U.S. Marine Corps Base, Quantico, Va..... | 58-59 |
| 061 | U.S. Naval Academy, Annapolis, Md..... | 59 |
| 099 | U.S. Naval Air Station, Patuxent, Md..... | 59 |
| 062 | U.S. Naval School of Hospital Administration, Bethesda, Md..... | 59 |
| 064 | Veterans Administration | 59 |

OFF-CAMPUS CENTERS OF THE COLLEGE OF GENERAL STUDIES

AN ASTERISK (*) preceding the name of a Center indicates participation in the Federal After-hours Program (formerly the Federal Triangle Education Association), a program for Federal agencies, military, and industry, situated in the downtown, Washington, D.C., area.

Aberdeen Proving Ground, Md. 21005

Education Director: John L. Lichy, Chief, Educational Services Division

Office: Army Education Center, Building 3146

Telephone: Area code 301, 278-3385

Field Representative for the University: Michael G. O'Connor

Telephone: 676-7023

Open to military and civilian personnel attached to the Aberdeen Proving Ground and Edgewood Arsenal and to other personnel by permission

Accounts, Bureau of (see Department of the Treasury)

Alexandria Public Schools, Alexandria, Va. 22314

John Albaum, Superintendent of Schools

Office: 418 S. Washington Street

Telephone: 549-9100

Andrews Air Force Base, Md. 20331

Education Director: John J. Duffy

Office: Room 4, Building 3484

Telephone: 981-6377

Field Representative for the University: Joseph E. Johnston

Telephone: 676-7022

Open to military and civilian personnel of the Air Force and to others by permission of the Commanding Officer

Anne Arundel County Public Schools, Annapolis, Md. 21402

Mrs. Ruth Dudderar, Assistant Superintendent

Office: Anne Arundel County Board of Education, Green Street

Telephone: Area code 301, 268-3345

Arlington County Public Schools, Arlington, Va. 22201

Harold Mack, Director, Secondary Education

Office: 1426 N. Quincy Street

Telephone: 522-7700

Army Map Service (see U.S. Army Topographic Command, Corps of Engineers)

Atlantic Research Corporation, Alexandria, Va. 22314

Education Director: Frederick H. Black, Jr., Corporate Director of Training
 Office: Room 201A, Corporate Headquarters Building, Shirley Highway at Edsall Road
 Telephone: 354-3400, Extension 510
 Field Representative for the University: John W. Gaffney
 Telephone: 676-7063
 Open to selected personnel by permission of the Corporate Director of Training

Bolling Air Force Base, Washington, D.C. 20332

Education Director: Anthony Witkowski
 Office: Room 205, Building P-20
 Telephone: 574-5348
 Field Representative for the University: Joseph E. Johnston
 Telephone: 676-7022
 Open to military and civilian personnel of the Air Force and to others by permission of the Commanding Officer

Building T-7, Gravelly Point, Washington, D.C. 20315

Education Director and Chairman of the Department of Defense Education and Training Advisory Council: Philip F. Strauss
 Office: Room 3C147, The Pentagon
 Telephone: 697-8015 or 697-2823

ARMY MATERIEL COMMAND

Program Coordinator: Mrs. Lois Richards
 Office: Room 2524, Building T-7
 Telephone: 697-9279
 Employee Development Officer: Reading Black
 Office: Room 1534, Building T-7
 Telephone: 697-0341

ARMY OFFICE OF CHIEF OF ENGINEERS

Program Coordinator: Frank H. Callahan
 Office: Room 2412, Building T-7
 Telephone: 695-5457

Field Representative for the University: William C. Robinson
 Telephone: 676-7064

Open only to active duty military personnel and Department of Defense civilians.

Bureau of the Census, Washington, D.C. 20233

Education Directors: James Vawter, Chief, Employee Development Branch, Personnel Division; John Hickey, Employee Development Officer, Personnel Division
 Office: Room 1370, Building FOB 3, Suitland, Md.
 Telephone: Area code 301, 440-1524

Field Representative for the University: Edward B. Wright
 Telephone: 676-7024

Open to all employees of the Bureau of the Census and the Naval Oceanographic Office and to others by permission

Bureau of Customs, Washington, D.C. 20226

Education Director: James J. Doherty, Director, Training and Career Development
 Office: 2100 K Street, N.W.
 Telephone: 964-8000

Field Representative for the University: Robert W. Stewart, Jr.
Telephone: 676-7018

Open to employees of the Department of the Treasury and to personnel of other government agencies by permission

***Bureau of Domestic and International Business, Washington, D.C. 20230**

Education Directors: Melvin Finn, Chief, Employee Development Branch; Mike Patchan, Jr., Employee Development Officer
Office: Room 1513, Commerce Department Building, 14th Street and Constitution Avenue, N.W.
Telephone: 967-2501 or 967-2222

Field Representative for the University: Robert W. Stewart, Jr.
Telephone: 676-7018

Open to employees of the Department of Commerce and to personnel of other government agencies by permission

***Bureau of Narcotics and Dangerous Drugs, Washington, D.C. 20573**

Education Director: N.E. Bentson, Personnel Officer
Office: Room 605, 1405 Eye Street, N.W.
Telephone: 382-4231

Field Representative for the University: Robert W. Stewart, Jr.
Telephone: 676-7018

Bureau of Naval Personnel, Washington, D.C. 20370

Education Director: John K. Wilkerson, Head, Training and Incentive Awards Section
Office: Room 1706, Arlington Annex
Telephone: 694-1269

Field Representative for the University: William C. Robinson
Telephone: 676-7064

Open only to active duty military personnel and Department of Defense civilians

Calvert County Public Schools, Prince Frederick, Md. 20678

Maurice A. Dunkle, Superintendent of Schools
Office: Calvert County School Board, Dares Beach Road
Telephone: Area code 301, 535-1700

Charles County Public Schools, LaPlata, Md. 20646

Charles Stackey, Assistant Superintendent
Office: Charles County Board of Education, Health and Education Building
Telephone: Area code 301, 934-4671

***Civil Service Commission, Washington, D. C. 20415**

Education Director: John W. Murtha, Director of Personnel
For information contact Employee Development Officer, Personnel Division, Room 1679, 1900 E Street, N.W.
Telephone: 632-5400

Field Representative for the University: Robert W. Stewart, Jr.
Telephone: 676-7018

Open to employees of the Civil Service Commission and to personnel of other government agencies by permission

Coast and Geodetic Survey (see Environmental Science Services Administration)

***Coast Guard, Washington, D.C. 20591**

Education Directors: Jasper L. Kranke, Supervisory Training Officer; Carl W. Easton, Training Officer

Office: Room 3012, U.S. Coast Guard Building, 1300 E Street, N.W.

Telephone: 964-8103

Field Representative for the University: Robert W. Stewart, Jr.

Telephone: 676-7018

Open to employees of the Coast Guard and to personnel of other government agencies by permission

David Taylor Model Basin (see Naval Ship Research and Development Center)***Department of Justice, Washington, D.C. 20530**

Education Director: Daniel Keenan, Departmental Training Officer

Office: Room 1229, Justice Department Building, 10th Street and Pennsylvania Avenue, N.W.

Telephone: 737-8200, Extension 3256

Field Representative for the University: Robert W. Stewart, Jr.

Telephone: 676-7018

Open to employees of the Department of Justice and to personnel of other government agencies by permission

***Department of Labor, Washington, D.C. 20210**

Education Director: Kenneth R. Bute

Office: Room 6137, Labor Department Building, 14th Street and Constitution Avenue, N.W.

Telephone: 961-2101

Field Representative for the University: Robert W. Stewart, Jr.

Telephone: 676-7018

Open to employees of the Department of Labor and to personnel of other government agencies by permission

Department of State, Washington, D.C. 20520

Liaison Officer: Mrs. Barbara Morlet, Training Specialist, Extension Studies Program, Office for Academic Relations

Office: Room 1106, Foreign Service Institute, State Annex 3, Washington, D.C.

Telephone: 383-8549 or 383-5919

Field Representative for the University: Robert W. Stewart, Jr.

Telephone: 676-7018

Open to employees of the Department of State, C.I.A., A.I.D., and U.S.I.A.

Department of the Treasury, Washington, D.C. 20226*BUREAU OF ACCOUNTS**

Education Director: Mrs. Hale A. Ament, Employee Development Officer

Office: Room 112, Treasury Annex Number 1, Pennsylvania Avenue and Madison Place, N.W.

Telephone: 964-5565

Field Representative for the University: Robert W. Stewart, Jr.

Telephone: 676-7018

Open to employees of the Department of the Treasury and to personnel of other government agencies by permission

***District of Columbia Government, Washington, D.C. 20001**

Education Directors: Benjamin J. Ludwig, Chief of Training; C. Howard Larson, Employee Development Officer

Office: Room 211, District of Columbia Government Building, 499 Pennsylvania Avenue, N.W.

Telephone: 629-2270 or 629-2997

Field Representative for the University: Robert W. Stewart, Jr.

Telephone: 676-7018

Open to employees of the District of Columbia Government and to personnel of other government agencies by permission

Edgewood Arsenal, Md. 21010

Education Director: Louis F. High, Post Director, General Educational Development Office: Army Education Center, Building 4475

Telephone: Area code 301, 676-1000, Extension 21153

Field Representative for the University: Michael G. O'Connor

Telephone: 676-7023

Open to military and civilian personnel attached to Edgewood Arsenal and Aberdeen Proving Ground and other personnel by permission

Education Courses for Teachers (see separate listings under individual Public Schools)

Environmental Science Services Administration, Rockville, Md. 20852

Education Directors: Mrs. Muriel Christgau, Training Branch, Personnel and Safety Division; Paul F. Murphy, Employee Development Officer

Office: Room 215, Building 5, Washington Science Center, 11800 Old Georgetown Road, Rockville, Md.

Telephone: 496-8261

Field Representative for the University: Edward B. Wright

Telephone: 676-7024

Type of Program Offered: undergraduate and graduate courses leading to the Bachelor's and Master's degrees offered off-campus

Open to all employees of the Department of Commerce and to others by permission

Fairfax County Public Schools, Fairfax, Va. 22150

W. Harold Ford, Assistant Superintendent for Instruction

Office: 10700 Page Avenue

Telephone: 273-6500

***Federal Aviation Administration, Washington, D.C. 20590**

Education Director: Mrs. Phyllis Burbank, Employee Development Specialist

Office: Room 509, 800 Independence Avenue, S.W.

Telephone: 962-1803

Field Representative for the University: Robert W. Stewart, Jr.

Telephone: 676-7018

Open to employees of the Federal Aviation Administration and to personnel of other government agencies by permission

Federal Bureau of Investigation, Washington, D.C. 20535

Special Agent: William E. Clark, Personnel Office

Office: Room 4513, Justice Department Building, 9th Street and Pennsylvania Avenue, N.W.

Telephone: 393-7100, Extension 402

Field Representative for the University: Joseph E. Johnston

Telephone: 676-7022

Open only to employees of the Federal Bureau of Investigation

***Federal Communications Commission, Washington, D.C. 20554**

Education Director: Robert M. Brown

Office: Room 208, 1919 M Street, N.W.

Telephone: 632-7120

Field Representative for the University: Robert W. Stewart, Jr.

Telephone: 676-7018

Open to employees of the Federal Communications Commission and to personnel of other government agencies by permission

Federal Reserve System, Washington, D.C. 20551

Education Coordinator: Miss Sudelle Rice, Personnel Technician

Office: Federal Reserve Building, 20th Street and Constitution Avenue, N.W.

Telephone: 737-1100, Extension 404

Field Representative for the University: Robert W. Stewart, Jr.

Telephone: 676-7018

Open to all government employees and others by permission

Fort Belvoir, Va. 22060

Education Director: Eric Eber; John Ivers, Education Adviser

Office: Building T-1483

Telephone: 664-3154 or 664-4546

Field Representative for the University: John W. Gaffney

Telephone: 676-7063

Open to military and civilian personnel of the Army and to other government employees by permission of the Commanding Officer

Fort Eustis, Va. 23604

Education Director: John Williams

Office: Building S711, Educational Development Services, Lee Blvd. and 12th Street

Telephone: Area code 703, 878-3731 or 878-5508

Director for the University at George Washington University Center (Tidewater Area), Fort Monroe, Va.: Robert C. Sedwick

Office: Building T-181

Telephone: 727-3363 or 727-3770

Open to military and civilian personnel of the Army and to other government employees by permission of the Commanding Officer

Fort McNair, Washington, D.C. 20315

Educational Adviser: Miss Margaret Lockwood

Office: Building 20A, Second Floor, Post Education Center

Telephone: 527-9400, Extension 268

Field Representative for the University: Joseph E. Johnston
Telephone: 676-7022

Open to military and civilian personnel of the Army and to other government employees by permission of the Commanding Officer

Fort George G. Meade, Md. 20755

Education Director: Gustaf E. Berglund
Office: Building 303, Army Education Center
Telephone: Area code 301, 677-6421

Field Representative for the University: Michael G. O'Connor
Telephone: 676-7023

Open to military and civilian personnel of the Army and to other government employees by permission of the Commanding Officer

NATIONAL SECURITY AGENCY

Education Director: Mrs. Dorothy Kilduff, Administration
Office: Building 1C190
Telephone: 688-7047

Field Representative for the University: Michael G. O'Connor
Telephone: 676-7023

Academic Counselors: Mrs. Stet Tasker, Mrs. Violet Kilmon
Office: Building 1C190
Telephone: 688-6364
Open only to NSA employees

Fort Monroe, Va. 23351

Education Director: Henry C. Stone
Office: Casemate 22, Education Center
Telephone: Area code 703, 727-2454 or 727-3692
Norfolk Office: Room 610, Building N23, N.O.B., Norfolk, Va. 23351
Telephone: Area code 703, 423-2839

Director for the University at George Washington University Center (Tidewater Area), Fort Monroe, Va.: Robert C. Sedwick
Office: Building T-181
Telephone: 727-3363 or 727-3770

Open to military and civilian personnel of the Army and to other government employees by permission of the Commanding Officer

Fort Myer, Va. 22208

Educational Adviser: Miss Margaret Lockwood
Office: Building 604, South Area, Post Education Center
Telephone: 697-0607

Field Representative for the University: Joseph E. Johnston
Telephone: 676-7022

Open to military and civilian personnel of the Army and to other government employees by permission of the Commanding Officer

Gramax Building, 8060 13th Street, N.W., Silver Spring, Md. 20910

Education Directors: Mrs. Muriel Christgau, Training Branch, Personnel and Safety Division; Paul F. Murphy, Employee Development Officer
Office: Room 215, Building 5, Washington Science Center, 11800 Old Georgetown Road, Rockville, Md.

Field Representative for the University: Edward B. Wright

Telephone: 676-7024

Type of Program Offered: undergraduate and graduate courses leading to the Bachelor's and Master's degrees offered off-campus

Open to all employees of the Department of Commerce and to others by permission

Gravelly Point (see Building T-7)

Harford Junior College, Bel Air, Md. 21014

Neal F. Warrington, Associate Dean

Office: Administration Building

Telephone: Area code 301, 734-7171

Field Representative for the University: Michael G. O'Connor

Telephone: 676-7023

Industrial College of the Armed Forces, Fort McNair, Washington, D.C. 20315

Project Officer: Col. Haydon J. Price, USA

Office: Room 206, Industrial College of the Armed Forces

Telephone: 695-8305

Director for the University: Edwin Timbers

Office: Room 206, Hall of Government, 710 21st Street, N.W.

Telephone: 676-6825

Type of Program Offered: graduate courses leading to the degree of Master of Science in Business Administration

Open to students and faculty of the Industrial College of the Armed Forces

***Internal Revenue Service, Washington, D.C. 20224**

Education Directors: D.C. Barry, Chief, National Office Training Branch; Miss Ruby Bennett, Employee Development Training Officer

Office: Room 1315, Internal Revenue Service Building, 12th Street and Constitution Avenue, N.W.

Telephone: 964-3931 or 964-6101

Field Representative for the University: Robert W. Stewart, Jr.

Telephone: 676-7018

Open to employees of the Department of the Treasury and to personnel of other government agencies by permission

***Interstate Commerce Commission, Washington, D.C. 20423**

Education Director: Samuel D. Bingman, Jr., Training Officer

Office: Room 1420, Interstate Commerce Building, 1200 Constitution Avenue, N.W.

Telephone: 373-9765, Extension 7116

Field Representative for the University: Robert W. Stewart, Jr.

Telephone: 676-7018

Open to employees of the Interstate Commerce Commission

Langley Air Force Base, Va. 23365

Education Director: Robert J. Dewey

Office: Building 1347

Telephone: 764-3520

54 COLLEGE OF GENERAL STUDIES

Director for the University at George Washington University Center (Tidewater Area), Fort Monroe, Va.: Robert C. Sedwick
Office: Building T-181
Telephone: Area code 703, 727-3363 or 727-3770
Open to military and civilian personnel of the Air Force and to other government employees by permission of the Commanding Officer

Linthicum Civic Association, Linthicum Heights, Md. 21090

Education Officer: Rodman Kulp
Office: 406 Sycamore Road
Telephone: Area code 301, 789-7446

Loudoun County Public Schools, Leesburg, Va. 22075

Caleb J. Gibson, Director of Instruction
Mrs. Ruth D. Schulke, Supervisor, Elementary Education
Office: Loudoun County School Board, 20 Union Street
Telephone: Area code 703, 777-2570

Main Navy Building, Washington, D.C. 20360

Education Directors: Thomas W. Gill, Head, Employee Development Division, CAPSO-N; Miss Kathleen V. Sullivan, Employee Development Officer, Program Coordinator; Mrs. Ruth R. Crouch, Employee Development Officer
Office: Room 0116, Main Navy Building, Constitution Avenue at 17th Street, N.W.
Telephone: 696-6155 or 696-7704

Field Representative for the University: Robert W. Stewart, Jr.
Telephone: 676-7018

Open to military and civilian personnel of the Department of Defense and to other government employees, retired military personnel, and Department of Defense contractors by permission

Melpar, Inc., Falls Church, Va. 22046

Education Director: Anthony B. DePasquale, Personnel Relations Manager
Office: Melpar, Inc., 7700 Arlington Blvd.
Telephone: 534-6000, Extension 2450

Field Representative for the University: John W. Gaffney
Telephone: 676-7063

Open to selected personnel by permission of the Personnel Relations Manager

Montgomery County Public Schools, Rockville, Md. 20850

Charles Proctor, Director, Staff Development; Frederick Snyder, Teacher Specialist
Office: Montgomery County School Board, 850 N. Washington Street
Telephone: 762-5000, Extension 395

NASSIF Building, 5611 Columbia Pike, Falls Church, Va. 22041

Education Director and Chairman of the Department of Defense Education and Training Advisory Council: Philip F. Strauss
Office: Room 3C147, The Pentagon
Telephone: 697-8015 or 697-2823

ARMY AUDIT AGENCY

Program Coordinator: Cyril E. Davis
 Office: Room 418, NASSIF Building
 Telephone: 692-2291

ARMY COMPTROLLER, AND FINANCE AND ACCOUNTING OFFICE

Program Coordinator: Lt. Col. P. P. Gerhards, USA
 Office: Room 318, NASSIF Building
 Telephone: 692-1479

ARMY MATERIEL COMMAND

Program Coordinator: Mrs. Lois Richards
 Office: Room 2524, Building T-7
 Telephone: 697-9279

MILITARY TRAFFIC MANAGEMENT AND TERMINAL SERVICE

Program Coordinator: Miss Marjorie C. Mays
 Office: Room 406, NASSIF Building
 Telephone: 692-1644

Field Representative for the University: William C. Robinson
 Telephone: 676-7064

Open only to active military personnel and Department of Defense civilians

National Bureau of Standards Graduate School, Washington, D.C. 20234

Registrar: Mrs. Virginia Maxwell
 Office: Gaithersburg, Md.

Telephone: 921-1000, Extension 3498

Field Representative for the University: Edward B. Wright
 Telephone: 676-7024

Open to all employees of the National Bureau of Standards—also to all employees of other government agencies and to all American citizens, providing they meet the formal prerequisites

National Naval Medical Center, Bethesda, Md. 20014**TRAINING AND EDUCATIONAL SERVICES BRANCH**

Employee Development Officer: Mrs. Virginia Lord
 Office: Room 32, Building 7

Telephone: 295-0574

Field Representative for the University: Edward B. Wright
 Telephone: 676-7024

Open to military and civilian personnel of the Navy, employees of the National Institutes of Health, and to others by permission

National Science Foundation, D.C. 20550

Training Officer: Herbert L. Morris
 Office: 1800 G Street, N.W.

Telephone: 632-4107

Field Representative for the University: Robert W. Stewart, Jr.
 Telephone: 676-7018

Open to all government employees by permission of the National Science Foundation

National Security Agency (see Fort George G. Meade)

National War College, Fort McNair, Washington, D.C. 20315

Project Officer: Col. Vernon K. Cammack, USAF

Office: Room 217, National War College

Telephone: 695-8490

Director for the University: Robert C. Burns

Telephone: 676-7049

Type of Program Offered: graduate courses leading to the degree of Master of Science in International Affairs

Open to students and faculty of the National War College

Naval Oceanographic Office, Suitland, Md. 20390

Education Directors: A. A. Meoli, Director of Civilian Personnel, Management Office: E. Clay Joseph, Head, Career Development Branch

Office: Room G-126, Building FOB 3

Telephone: Area code 301, 763-1560

Field Representative for the University: Edward B. Wright

Telephone 676-7024

Type of Program Offered: undergraduate and graduate courses leading to the Bachelor's and Master's degrees

Open to military and civilian personnel of the Navy, employees of the Census Bureau; others may obtain permission to attend by calling the Career Development

Office, Telephone 263-1560

Naval Ordnance Station, Indian Head, Md. 20640

Education Director: Dominique C. Bizier; Mrs. D. Barron and Donald Jehlik, Career Guidance Counselors

Office: Industrial Relations Department, Building D-71

Telephone: Area code 301, 743-5511, Extension 280 or 480

Field Representative for the University: Edward B. Wright

Telephone: 676-7024

Open to military and civilian personnel of the Navy and to others by permission of the Commanding Officer

Naval Ship Research and Development Center, Carderock, Md. 20007

Education Director: Loric F. Fox, Head, Training Division

Office: Room 41, Building 8

Telephone: 995-1501

Field Representative for the University: Edward B. Wright

Telephone: 676-7024

Open to military personnel and civilian employees of the Naval Ship Research and Development Center and to others by permission of the Commanding Officer

Naval Ship Research and Development Laboratory, Annapolis, Md. 21402

Education Director: Price Mosher

Office: Training Center, Building 42

Telephone: Area code 301, 268-7711, Extension 8210

Field Representative for the University: Michael G. O'Connor

Telephone: 676-7023

Open to military and civilian personnel of the Navy and to others by permission of the Commanding Officer

Naval Supply Center, Norfolk, Va. 23511

Education Director: Mrs. Mary K. Lawson, Director, Industrial Relations Department
Office: Building W-143

Telephone: Area code 703, 444-2144 or 444-4912

Norfolk Office: Room 610, Building N23, N.O.B., Norfolk, Va.

Telephone: Area code 703, 423-2839

Director for the University at George Washington University Center (Tidewater Area), Fort Monroe, Va.: Robert C. Sedwick

Office: Building T-181

Telephone: Area code 703, 727-3363 or 727-3770

Open to military and civilian personnel of the Navy and to other government employees by permission of the Commanding Officer

Naval War College, Newport, R.I. 02840

Project Officer: Col. N.L. Chapin, USA

Office: Room 113, Luce Hall

Telephone: Area code 401, 841-3021

Director for the University at Newport: Clyde B. Sargent

Office: Room 361, Pringle Hall

Telephone: Area code 401, 847-2629

Type of Program Offered: graduate courses leading to the degree of Master of Science in International Affairs

Open to faculty and students of the Naval War College

Patent Office, Washington, D.C. 20231

Education Director: Willis Hokana, Employee Development Officer

Office: Room 2-9C-27, Building 2, Crystal Plaza, 2011 Jefferson Davis Highway, Arlington, Va.

Telephone: 557-3431

Field Representative for the University: Robert W. Stewart, Jr.

Telephone: 676-7018

Open to employees of the Department of Commerce and to personnel of other government agencies by permission

The Pentagon, Washington, D.C. 20310

Director of the Pentagon Education Center, Chairman of the Department of Defense Education and Training Advisory Council, and Education Officer for the U.S. Army: Philip F. Strauss

Assistant to the Director: George L. Bowman

Office: Room 3C147

Telephone: 697-2823 or 697-6805 or 697-8015

U.S. AIR FORCE

Education Officer: Anthony J. Witkowski

Office: Room 5E410

Telephone: 697-1863 or 697-7074

Field Representative for the University: William C. Robinson

Pentagon Desk: Reception Center on the Concourse

Telephone: 697-3141

University Telephone: 676-7064

Open only to active duty military personnel and Department of Defense civilians

***Post Office Department, Washington, D.C. 20260**

Education Directors: Francis J. Mahaney; J.A. Matukonis, Training Division, Bureau of Personnel
Office: Room 1230, New Post Office Building, 12th Street and Pennsylvania Avenue, N.W.
Telephone: 961-8578

Field Representative for the University: Robert W. Stewart, Jr.
Telephone: 676-7018

Open to employees of the Post Office Department and to personnel of other government agencies by permission

Prince Georges County Public Schools, Upper Marlboro, Md. 20870

Edward Turner, Director of Staff Development
Office: Prince Georges County School Board
Telephone: 627-4800

St. Mary's County Public Schools, Leonardtown, Md. 20650

Robert S. King, Jr., Superintendent of Schools; James Ogden, Assistant Superintendent of Schools
Office: St. Mary's County School Board of Health Building
Telephone: Area code 301, GReenwood 5-9141

Social Security Administration, Baltimore, Md. 21235

Employee Development Specialist: Eric Levi
Office: Room 4-D-10, Operations Building, 6401 Security Blvd.
Telephone: Area code 301, 944-5000, Extension 5396

Field Representative for the University: John F. Lobuts
Telephone: 676-7015

Open to employees of the Social Security Administration and to others by permission

Tidewater Area, Va. (see Fort Monroe)

U.S. Army Topographic Command, Corps of Engineers, Washington, D.C. 20315

Education Directors: Jerome E. McClain, Chief, Employee Development Division;
Edward T. O'Brien, Personnel Specialist
Office: Erskine Hall, 6500 Brooks Lane, N.W.
Telephone: 986-2384 or 986-2385

Field Representative for the University: Edward B. Wright
Telephone: 676-7024

Type of Program Offered: undergraduate courses leading to the degrees of Bachelor of Science in Geodetic and Cartographic Science and Bachelor of Science in Oceanography

Open to employees of the U.S. Army Topographic Command and others by permission, obtained at least one week prior to the first week of classes, from the Training and Development Division, telephone 986-2384

U.S. Marine Corps Base, Quantico, Va. 20390

Education Officer: Lt. David R. Jones, USMC
Office: Education Office, Building 2005
Telephone: Area code 703, 640-2121, Extension 24744

Field Representative for the University: John W. Gaffney

Telephone: 676-7063

Open to military personnel and their dependents and civilian personnel attached to the Marine Corps Base. Other selected personnel may be admitted by permission of the Commanding Officer

U.S. Naval Academy, Annapolis, Md. 21402

Coordinator for the Academy: William W. Jeffries, Senior Professor of English, History and Government Department

Office: Maury Hall

Telephone: Area code 301, 268-7711, Extension 642

Field Representative for the University: Michael G. O'Connor

Telephone: 676-7023

Open to military and civilian personnel attached to the Academy and other personnel by permission of the Naval Academy

U.S. Naval Air Station, Patuxent, Md. 20670

Education Director: E.G. Russell, Head, Employee Development Branch; Mrs. Wanda Denton, Employee Development Specialist

Office: Industrial Relations Department, Naval Air Test Center, Building 463

Telephone: Area code 301, 863-3734 or 863-3735

Field Representative for the University: Edward B. Wright

Telephone: 676-7024

Open to military and civilian personnel of the Navy and to others

U.S. Naval School of Hospital Administration, Bethesda, Md. 20014

Commanding Officer: Capt. R.M. Tennille, Jr., MSC, USN

Academic Director: LCdr. G.J. Pearce, MSC, USN

Office: Room 131, Building 141

Telephone: 295-1314

Field Representative for the University: Edward B. Wright

Telephone: 676-7024

Open to military personnel assigned to duty under instruction at the U.S. Naval School of Hospital Administration

Veterans Administration, Washington, D.C. 20420

Education Directors: Raymond L. Butler, Chief, Employee Relations and Training Division; Philip L. Loomis, Assistant Chief, Employee Relations and Training Division

Office: Room 100, Veterans Administration Main Building, Vermont Avenue and H Street, N.W.

Telephone: 389-3101

Field Representative for the University: Robert W. Stewart, Jr.

Telephone: 676-7018

Open to employees of the Veterans Administration and to personnel of other government agencies by permission

COURSES OF INSTRUCTION

ON THE FOLLOWING PAGES OF THIS CATALOGUE, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered by the College of General Studies. The courses are subject to change. The University reserves the right to withdraw any course announced.

EXPLANATION OF COURSE NUMBERS

Courses are assigned dual numbers. The first is a serial number assigned by the College of General Studies at the time of registration. The serial number does not appear in this catalogue and is used to distinguish one class from another when the same course is offered simultaneously at different places. The second number is the course number assigned by the department and indicates the academic level of each course, as follows:

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be taken for graduate credit only upon the approval of the dean and the instructor at the time of registration. Such approval is granted only with the provision that students must complete additional work in order to receive graduate credit.

Third-group courses.—Courses numbered above 200 are planned primarily for graduate students. They are open, with the approval of the instructor, to qualified seniors; they are not open to other undergraduates.

SEMESTER HOURS OF CREDIT

The number of semester hours of credit given for the satisfactory completion of a course is, in most cases, indicated in parentheses after the name of the course. Thus, a year course giving 3 hours of credit each semester is marked (3-3), and a semester course giving 3 hours of credit is marked (3). A semester hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

ABBREVIATIONS

In the description of courses in this catalogue, the following abbreviations are used:

| | | | |
|------|---------------------------------------|------|----------------------------------|
| Acct | Accounting | Hist | History |
| Anth | Anthropology | Hum | Humanities |
| Art | Art | I Af | International Affairs |
| B Se | Biological Sciences | Ital | Italian |
| B Ad | Business Administration | Jour | Journalism |
| B&PA | Business and Public Administration | L Am | Latin American Civilization |
| Cart | Cartography | Math | Mathematics |
| Chem | Chemistry | Mus | Music |
| Chin | Chinese Language and Literature | Ocea | Oceanography |
| Econ | Economics | Phil | Philosophy |
| Educ | Education | P E | Physical Education |
| Engl | English | Phys | Physics |
| Epid | Epidemiology and Environmental Health | P Sc | Political Science |
| Fren | French | Psyc | Psychology |
| Geod | Geodesy | P Ad | Public Administration |
| Geog | Geography and Regional Science | Rel | Religion |
| Geol | Geology | Slav | Slavic Languages and Literatures |
| Geop | Geophysics | Soc | Sociology |
| Germ | Germanic Languages and Literatures | Span | Spanish |
| HCA | Health Care Administration | S Ed | Special Education |
| | | Sp&D | Speech and Drama |
| | | Stat | Statistics |
| | | Swed | Swedish |

Accounting

Chairman: E.J.B. Lewis, Professor of Accounting; Government 100, Telephone: 676-4055

1-2 Introductory Accounting (3-3)

Preparation, uses, and limitations of financial reports. Acct 1: basic financial reporting concepts and data accumulation and processing. Acct 2: introduction to managerial accounting—financial programming, cost determination, and analysis of financial statements. Accounting 1 is prerequisite to Accounting 2.

101 Cost Accounting (3)

Theory and purposes of industrial cost accounting, systems of cost control and determination, analysis and interpretation of cost data. Prerequisite: Acct 1-2.

111 Financial Statement Analysis (3)

Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors. Prerequisite: 6 semester hours of accounting or permission of instructor.

115 Survey of Accounting (3)

Preparation, uses, and limitations of financial information in the management process. Not open for credit to Accounting majors.

121-22 Intermediate Accounting (3-3)

Acct 121: accounting for assets and liabilities. Prerequisite: Acct 1-2 or permission of instructor. Acct 122: partnership, corporation, consignment, and installment-sales accounting. Prerequisite: Acct 121 or permission of instructor.

141 Governmental Accounting (3)

Appropriation, encumbrance, and fund accounting for governmental and institutional entities. Prerequisite: Acct 1-2 or permission of instructor.

144 Federal Accounting (3)

Accounting procedures in the Federal Government; emphasis on agency-level accounts and accounting support for cost-based budgets. Prerequisite: Acct 141 or permission of instructor.

161 Federal Income Taxation (3)

Federal income tax concepts applicable to individuals and corporations. Differences between tax accounting and financial accounting. Prerequisite: Acct 1-2 or permission of instructor.

171 Auditing (3)

Duties and responsibilities of auditors: principles and procedures of making audits, techniques of verifying financial statement items, preparation of audit working papers and reports. Prerequisite: Acct 121-22.

181 Accounting Systems (3)

Theory and procedure of designing and installing systems for collecting, recording, analyzing, and presenting accounting and other business data. Prerequisite: Acct 101, 121-22, and 171, or permission of instructor.

191 Advanced Accounting (3)

Consolidated statements, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Acct 121-22.

193 Business Budgeting (3)

Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in management of commercial and industrial organizations. Prerequisite: Acct 1-2

215 Survey of Managerial Accounting (3)

Nature, preparation, analysis, and interpretation of accounting reports; cost accounting, business budgeting, and internal accounting controls and their use in the management process. Prerequisite: Acct 1-2 or 115 or permission of instructor.

231 Contemporary Accounting Theory (3)

Advanced accounting principles and concepts and recent theories concerned with the valuation and amortization of assets and determination of income. Prerequisite: 6 semester hours of accounting and permission of instructor.

276 Management Planning and Control (3)

Theories and techniques of cost accounting and budgetary planning and control, with emphasis on: the relation of planning and control systems to corporate and departmental objectives; control of decentralized operations and discretionary costs; long-range planning and control. Prerequisite: Acct 101 and B Ad 102 or B&PA 201, or permission of instructor.

Anthropology

Chairman: R.K. Lewis, Associate Professor of Anthropology; X-20, Telephone: 676-6075

1-2 Introductory Anthropology (3-3)

Anth 1: survey of man's origin, physical evolution, and culture history.
Anth 2: a survey of the world's cultures, illustrating the principles of cultural behavior.

Art

Chairman: L.P. Leite, Professor of Art; Stuart Basement (front), Telephone: 676-6085

1 Art Appreciation (3)

Language and function of art in its various media; development of styles, aesthetic principles, theories, and the ideas in art through the ages. Primarily for nonmajors.

31-32 Survey of Western Art (3-3)

Survey of the arts in the Western World from prehistoric to modern times. A foundation for further study in the history of art.

71-72 Introduction to the Arts in America (3-3)

Painting, sculpture, and architecture of America, with selected references to crafts and popular arts. Art 71: from Colonial beginnings to the Republican Age. Art 72: from early 19th century to the present.

110 Contemporary Art (3)

Painting and sculpture in 20th century Europe.

116 Art and Archeology (3)

A summer study tour abroad.

Biological Sciences

Chairman: A.H. Desmond, Professor of Zoology; Bell 301, Telephone: 676-6090

BIOLOGY

3-4 Introductory Biology for Nonscience Majors (3-3) (Campus Course)
Lecture (2 hours), laboratory (2 hours). Survey of biological principles; emphasis on man as a functional organism in his environment. Material fee, \$10 a semester.

11-12 Introductory Biology for Science Majors (4-4) (Campus Course)
Lecture (3 hours), laboratory (3 hours). Biological principles and problems designed to furnish a base for advanced studies in biology and related sciences. Required of all prospective biology, botany, and zoology majors. Material fee, \$10 a semester.

Business Administration

Chairman: P.D. Grub, Associate Professor of Business Administration; Government 201, Telephone: 676-6115

51 Introduction to Business (3)

The business environment; structure, activities, and problems of business enterprise; its contribution to society; careers in business.

102 Fundamentals of Management (3)

Planning, organizing, directing, coordinating, and controlling activities of the administrative unit; evolution of management thinking.

103 Institutional Management (3)

Philosophy of hospital administration: special services, food service, maintenance, internal review.

105 Personnel Management (3)

The labor force and labor markets. Industrial personnel and manpower programs, organizations and policy in personnel activities.

106 Problems in Personnel Management (3)

Principles and problems of personnel management and industrial relations illustrated by cases drawn from industry and government. Prerequisite: B Ad 105.

107 Collective Bargaining (3)

Characteristics of American unionism and collective bargaining; economic, social, and public policy considerations. Management's role in the negotiation and administration of collective bargaining agreements.

109 Office Management (3)

Organization and management of the office, office and information systems, planning and execution of work, systems analysis supervision problems.

111-12 Personnel Records Administration (3-3)

B Ad 111: basic principles, techniques, and methods used in collecting, processing, evaluating, and storing personnel records of all kinds. B Ad 112: problems and cases in special kinds of records keeping and records administration.

113 Real Estate (3)

Principles of urban real estate practice; leasing and property management, valuation, appraisal, financing, taxation, urban growth, urban renewal.

118 Introduction to Data Processing (3)

Basic principles and methods of data processing. Introduction to fundamentals, potentials, and problems of automatic data processing as a tool of management.

119 Data Processing Programming (3)

Basic principles and methods of computer programming. Introduction to computer programming concepts; form and character of instructions and programming schema for leading types of digital electronic computers. Prerequisite: B Ad 118 or permission of instructor.

120 Data Processing Systems (3)

Basic principles and methods of data systems analysis, design, and implementation. Emphasis on relationship between equipment systems and management information systems; development of data processing systems. Prerequisite: B Ad 118 or permission of instructor.

131 Business Finance (3)

Basic principles involved in the financing of business enterprises. Prerequisite: Acct 1-2.

132 International Business Finance (3)

Introduction to principles, practices, problems, and institutions of international finance. Emphasis on international financial markets, exchange rates, balance of payments restraints, and governmental policies.

138 Investment and Portfolio Management (3)

Principles of security investments: analysis of specific security investments and security markets, industry studies, portfolio construction and management. Prerequisite: Acct 1-2, B Ad 131.

141 Basic Marketing Management (3)

Introduction to marketing and marketing management in relation to our total economy and business management, consumer and demand analysis, retailing, wholesaling, major marketing management problems and policies with particular emphasis on major decision areas and tools. Prerequisite: Econ 1-2.

144 International Marketing Management (3)

Introductory course; analysis of the international marketing position of the United States, channels for international marketing, international advertising media, legal aspects of international marketing, methods of preparing foreign market surveys, development of policies.

158 Physical Distribution Management (3)

Distribution from shipper's point of view: problems of plant location, inventory control, warehousing; traffic management emphasized, including private carriage.

161 Commercial Law: Contracts, Sales, Agency, Bailments (3)**162 Commercial Law: Negotiable Instruments, Property, Mortgages (3)****171 Principles of Transportation (3)**

Impact of intercity transportation systems on society. Emphasis on modal differences in development, economic characteristics, and regulation.

173 Transportation Systems Management (3)

Comparative study, from the standpoint of various carrier modes, of management problems common to all modes of domestic and international transportation.

175 Introduction to Foreign Trade (3)

The physical movement of goods in international business; conditions essential for successful trading; development of a hypothetical export shipment, including examples of documentation required and discussion of procedural problems from a management point of view. Emphasis on ocean marine insurance and export traffic management policy. Prerequisite: Econ 1-2.

176 International Business Theory and Policy (3)

Causal relationships underlying international business transactions, role of government in international trade, international agreements between private producers, trade with developing nations, developing international business policy.

178 Management of International Business Operations (3)

Analysis of overseas projects according to purpose and type of organization; case studies involving development and management of overseas marketing programs and other operations in different world areas. Prerequisite: B Ad 175 or permission of instructor.

181 Manufacturing Production (3)

Basic principles and methods of manufacturing production. Manufacturing facilities, plant and equipment. Illustrations selected from various process and fabrication industries.

198 Case Problems in Management (3)

Principles and techniques of management illustrated by cases drawn from business and industry. Prerequisite: B Ad 102, 105, 131, 141.

208 Personnel Management and Industrial Relations (3)

Survey of personnel management practices and procedures, including labor-management relations.

209 Seminar: Personnel Management (3)

Discussion of industrial personnel and manpower management, and research in advanced problems.

- 212 Unionism and Collective Bargaining (3)**
The American labor movement. Collective bargaining and the conduct of labor relations under collective bargaining agreements.
- 213 Current Issues in Unionism, Collective Bargaining, and Labor Relations (3)**
Current problems and issues. Prerequisite: B Ad 212.
- 225 Seminar: Manufacturing Production (3)**
Examination of production technology, including new manufacturing processes, materials, products, equipment, and facilities. Implications of emerging technology in managing the production function. Cases, lectures, and individual student research. Prerequisite: B Ad 181 or permission of instructor.
- 229 Seminar: Administration of Research and Development (3)**
Examination of technological, political, and economic factors affecting the R&D environment; operational aspects; management problems in military, governmental, and industrial organizations; project selection, resource allocation, personnel, planning and control, measurement and evaluation.
- 231 Financial Decision Making (3)**
(Formerly *Corporate Financial Problems*)
Functions and objectives of financial management, asset management, problems of internal financial analysis, rate-of-return analysis, financial forecasting, problems of capital demand and supply.
- 232 Seminar: Capital Resource Management (3)**
(Formerly *Seminar: Business Finance*)
Problems of capital acquisition, costs, rationing, structure; dividend policy. Prerequisite: B Ad 231.
- 233 Seminar: International Business Finance (3)**
Case development and analysis of problems in international business finance. Impact of the evolving international payments system on business.
- 237 Investment Analysis (3)**
Analysis of specific security investments; common and preferred stocks; corporate, government, and revenue bonds; sources of information.
- 238 Seminar: Investment and Portfolio Management (3)**
(Formerly *Seminar: Investments*)
Research and analysis of investment problems, techniques of selection and management of various types of funds. Prerequisite: B Ad 237.
- 241 Advanced Marketing Management (3)**
Marketing management problems and policies in major decision areas of product planning, channels of distribution, advertising, personal selling, sales promotion, pricing, and development of integrated marketing programs. Tools useful in decision making. Case analysis.
- 248 International Marketing (3)**
Organization for international marketing, foreign demand analysis, product development and policies, marketing structure and trade channels, advertising and promotion problems and policies, pricing, credits and collec-

tions, and legal aspects. Particular emphasis on development of effective international marketing strategy.

253 Distribution Logistics (3)

Application of the systems concept to problems of physical distribution and supply of goods. Role of logistics in the economy and the business firm, transportation rates and services, location theory and problems, customer service standards pricing, inventory control, information flow, scheduling, allocation, warehousing, traffic, and logistics system organization.

255 Seminar: International Trade I (3)

Research, analysis, and discussion of public and private foreign trade institutions; principles and theories of international trade; role of foreign trade and investment on U.S. balance of payments; problems and changing patterns in U.S. trade in the Western Hemisphere.

256 Seminar: International Trade II (3)

Research, analysis, and discussion of international problems arising from economic integration; emphasis on European Economic Community; U.S. trade with developing nations; East-West trade problems and potential; foreign trade policy of the United States.

257 The Manager in the World Economy (3)

Analysis and discussion of problems in international business by use of the case method, including international market entry and expansion; operating policies, procedures, and problems of multinational companies; developing executives for international business.

261 Managerial Economics I (3)

Managerial applications of economic analysis. Applications of economic theory and statistics to business decisions involving demand, production, cost, profits, investments, and inventories. Prerequisite: B&PA 203, Econ 217, Stat 111 and 112; or equivalent; or permission of instructor.

262 Managerial Economics II (3)

Managerial applications of economic analysis. Use of economic theory and statistics in business forecasting; interpretation of economic trends and developments; analysis of governmental economic policies as they affect business. Prerequisite: B&PA 203, Econ 218, Stat 111 and 112; or equivalent; or permission of instructor.

280 Procurement and Contracting (3)

Survey and overview of procurement and contracting practices and procedures in government and industry.

281 Purchasing Principles and Practices (3)

Industrial purchasing practices and principles. Organization and functions of the purchasing department. Types of purchase agreements, source selection, competition and negotiation, policies and ethics.

282 Government Contract Administration (3)

Surveillance over performance of contract. Rights and obligations: changes, suspension of work, default, termination for the convenience of the government, inspection, warranties, procedures for the settlement of controversies on government contracts.

283 Pricing and Negotiation (3)

Collecting and evaluating data for pricing purposes. Negotiating profits. Weighted guidelines and other attempts at formalizing the profit computation. Negotiation procedures and techniques.

285 Systems Procurement and Project Management (3)

Development and procurement of major systems. Project management and the impact of this technique on the procurement process. Procurement planning—from concept formulation through contract definition, development, and manufacture.

295 Business Decision Simulation (3) (Campus Course)

Managerial decision making in a diversified multinational firm. Students are organized into teams in a simulated competitive environment in which a complex situation is played out using computers. Prerequisite: advanced Master's or doctoral standing.

296 Seminar: Controllorship (3)

Advanced problems of financial management.

297 Case Studies in Business Administration (3)

Cases covering the whole range of business activity. Analysis of operational situations and policy issues. Developing and implementing solutions to managerial problems.

299 Thesis Seminar (3)

Examination of thesis standards, research philosophy and methodology.

300 Thesis Research (3)

Business and Public Administration*

Chairman: P.D. Grub, Associate Professor of Business Administration; Government 201, Telephone: 676-6115

201 Advanced Administrative Management (3)

Advanced course in administration emphasizing principles and practices common to administrative units of all kinds.

203 Mathematics for Management (3)

Mathematical concepts employed in the solution of management problems. Applications of analytical geometry, functions, elements of calculus, and linear algebra to optimization problems. Prerequisite: algebra.

204 Quantitative Factors in Administration (3)

Survey of quantitative techniques used in the solution of management problems. Potentials and limitations of mathematical models and proper areas for their application. Topics include probability, statistical decision theory, linear programming, waiting line, inventory replacement models. Prerequisite: B&PA 203 or equivalent.

* Administered by the Department of Business Administration

207 Human Behavior in Organizations (3)

Individual, group, intergroup, and other human behavior and development; application of social science research to administration. Practical applications emphasized.

211 Leadership and Executive Performance (3)

Theories of managerial leadership; issues and problems associated with leadership in large organizations and at higher management levels; executive selection and development. Prerequisite: B&PA 201 or permission of instructor.

218 Survey of Data Processing (3)

Fundamentals of automatic data processing; manual, punched card, and electronic data processing principles and procedures; basic machine language and advanced language programming techniques; phases of data systems development; role of the manager in management information systems. Emphasis on proper use of data processing as another tool of management.

219 Digital Computer Programming Concepts (3)

Programming concepts, techniques, and practices; FORTRAN and COBOL; address modifications, indexing, sub-routines, sub-programs, table look-up, machine functions, data representation, instruction formatting, and programming systems; government- and business-oriented problems. Students will not become programmers, but will understand the use of programming in management information systems. Prerequisite: B&PA 218 or permission of instructor.

220 Comparative Digital Computer Systems and Their Management (3)

Characteristics and capacities of the range of data processing equipment in use today, special purpose equipment in business and government, recent and prospective equipment developments. Fundamentals of data processing installation design and management. Prerequisite: B&PA 218 or 219, or permission of instructor.

221 Management Information Systems Development and Application (3)

Development of management information systems, integration of data processing in operations of government or business, impact on management organization and decision making. Case studies. Prerequisite: B&PA 218 or 219 or 224; or permission of instructor.

223 Management of a Data Processing Organization (3)

Organization and management of data processing function in business and government; study of types of resources required: planning, scheduling, and production of data processing workloads; performance standards; evaluation criteria. Prerequisite: B&PA 218 and either 219 or 220; or permission of instructor.

224 Theory and Management of Systems (3)

Advanced course in systems, emphasizing systems theory and the capacities, capabilities, and management of current, large systems. Analysis of components and elements of systems and their association with management concepts. Applications; various techniques and potential problems for implementation. Systems of the future are projected with consideration of quantitative and technological developments. Particular emphasis on com-

puter-based and communications-oriented systems. Prerequisite: B&PA 201, 218.

225 Introduction to Managerial Statistics (3)

(B&PA 225 and 226 replace former 225-26 Statistics and Probability as Applied to Management Problems)

Introduction to the mathematics of probability and statistics and its applications in management science and operations research. Topics include random variables, discrete and continuous probability distributions; moments and other descriptive measures; sampling theory; and an introduction to statistical estimation, hypothesis testing, and regression analysis. Prerequisite: B&PA 203 or equivalent.

226 Managerial Statistics (3)

(B&PA 225 and 226 replace former 225-26 Statistics and Probability as Applied to Management Problems)

Management applications of the theory and techniques of mathematical statistics. Topics include maximum likelihood and other methods of estimation, hypothesis testing, descriptive measures of bivariate distributions, regression and correlation, analysis of time series, econometric models and multiple regression, statistical decision theory, and the revision of probabilities in decision making. Prerequisite: B&PA 225.

227 Mathematical Programming: Techniques and Applications (3)

Technical and management considerations of linear and nonlinear programming. Mathematical and computational aspects of linear programming. Formulation of linear programming models. Studies of applications of linear programming. Introduction to theory and application of nonlinear programming. Prerequisite: B&PA 203 or equivalent.

228 Systems Analysis by Simulation (3)

Methods of systems analysis via computer simulation. Particular attention to inventory models, although queueing systems and management planning models are also covered. Prerequisite: B&PA 225, 226.

263 Organization and Management (3)

Contemporary management theory; emphasis on application of management concepts in organizational practice. Comparative studies of current organizational designs and management processes. Prerequisite: B&PA 201, 204, 207.

268 Management Engineering (3)

Analysis of the techniques for initiation and implementation of management engineering programs; emphasis on organization and methods surveys, including the study of work measurement, work simplification, management audits, and other management improvement programs. Not open to students who have taken former B&PA 269.

^{*280-81}
-82 **Managerial Aspects of National Security (3 or 4-3 or 4-3)**

The application of business management principles to the military aspects of national security; organization and administration of the Federal Government for national defense; management of national resources (natural,

^{*} Available only to students in the Master of Science in Business Administration program at the Industrial College of the Armed Forces.

human, energy, economic); budgeting and controllership; determination of requirements; procurement; production; supply management; and communications.

287 Relations of Government to Business (3)

Activities of government in relation to business management in areas of labor relations, wages, production, and prices. Trend and change in economic activity and its bearing upon government policy.

295 Research Methods (3)

Research techniques, sources of information, array and analysis of data, interpretation and presentation of the findings.

Cartography*

Program Adviser: Hyman Orlin, Professorial Lecturer in Mathematics; Telephone: 496-8720

1-2 Introduction to Cartography (3-3)

The use of maps. History of mapping. Introduction to the fundamental concepts of topography, hydrography, and cartography. Characteristics and uses of different kinds of maps and charts, symbolization, representation of relief, geographic and grid coordinates, attributes of various projections, reliability. Making maps. Fundamental concepts of geodesy and geomorphology as applied to maps and charts, surveying methods, application to aerial photography, photo interpretation, map design, compilation and reproduction. Prerequisite: Geog 51.

103-4 Photo Interpretation (3-3)

Photo interpretation and its uses. History of photo interpretation. Fundamental concepts of image interpretation, topography, hydrology, vegetation, and man-features. Parameters affecting photo interpretation. Civil and military interpretation. Measurements, keys, and diagnostic techniques; reliability. Infrared and radar photo interpretation. Satellite photography. Prerequisite or concurrent registration: Geod 17.

107 Geomorphology (3)

Development of geomorphic concepts; the earth's crust, weathering, climate, and denudation; stream, shore, wind, and ice processes; glaciation; physiographic regions. Prerequisite: Cart 2.

108 Climatology (3)

Introduction, causes for climate and weather, air mass movements, water mass movements, physical features of boundaries. Tropics, subtropics, humid and dry continentals, subarctics. Prerequisite: Cart 107.

111 Cartographic Techniques (3)

Modern cartographic techniques as applied to maps and charts. Map compilation, color separation scribing for preparing map manuscripts for multicolor printing, scribing instruments and procedures, map editing, cartography for photo-image maps and map substitute products, aviation and aerospace cartography. Prerequisite: Chem 12, Cart 2.

* Affiliated with the Department of Mathematics.

112 Advanced Cartography (3)

Recent cartographic practices. Prerequisite: Cart 111.

Chemistry

Chairman: C.R. Naeser, Professor of Chemistry; Corcoran 104, Telephone: 676-6120

3-4 Fundamentals of Physical Science (4-4) (Campus Course)

A year course: credit toward a degree at this University given on completion of Chemistry 4. Lecture (3 hours), laboratory (3 hours). Selected topics from chemistry, physics, astronomy, and geology are integrated to introduce the nonscience major to the basic methods and achievements of physical science. Laboratory fee, \$11 a semester.

11-12 General Chemistry (4-4) (Campus Course)

A year course: credit toward a degree at this University given on completion of Chemistry 12. Lecture (3 hours), laboratory (3 hours), recitation (1 hour). Elementary course in general chemistry, including qualitative analysis. Prerequisite: one year of high school algebra. Laboratory fee, \$18 a semester.

Chinese Language and Literature*

Adviser: Chung-wen Shih, Associate Professor of Chinese; Maury 41, Telephone: 676-7106.

1-2 Beginning Mandarin Chinese, Level I (3-3) (Campus Course)

A year course: credit toward a degree at this University given on completion of Chinese 2. Classroom (3 hours), tutorial (1 hour), laboratory (1 hour). Fundamentals of grammar and pronunciation with graded reading and practice in writing. Listening comprehension and oral practice in language laboratory. Laboratory fee, \$17.50 a semester.

3-4 Beginning Mandarin Chinese, Level II (3-3) (Campus Course)

A year course: credit toward a degree at this University given on completion of Chinese 4. Classroom (3 hours), tutorial (1 hour), laboratory (1 hour). Continuation of grammar and spoken Chinese with more emphasis on the written language and reading; writing commonly used Chinese characters, reading selected writings. Aural training, oral practice in language laboratory. Prerequisite: Chin 2 or equivalent. Laboratory fee, \$17.50 a semester.

* Administered by the School of Public and International Affairs.

Economics

Chairman: C.E. Galbreath, Professor of International Economics; Monroe 401, Telephone: 676-6150

Departmental prerequisite: Economics 1-2 is prerequisite to all other courses in Economics.

1-2 Principles of Economics (3-3)

Lecture (2) hours), recitation (1 hour). Survey of the major economic principles, institutions, and problems in contemporary life. Econ 1 is prerequisite to Econ 2.

121 Money and Banking (3)

Nature of money, credit, commercial banking, and other financial institutions in the U.S. monetary system.

* 179-80 U.S. Economic History (3-3)

Process of economic growth from Colonial times to the present. Development of various sectors in the economy—such as agriculture, transportation, manufacturing, and banking—and their interdependence. Econ 179: 1607-1865. Econ 180: 1865 to present.

217-18 Survey of Economics (3-3)

For graduate students in fields other than economics. Econ 217: price theory. Econ 218: income and employment theory. Not open to graduate students in economics.

†251 Economic Development (3)

Theories and problems of economic growth; special attention to the underdeveloped countries.

Education

Chairman: B.S. Root, Professor of Education; Stuart 300, Telephone: 676-6160

Departmental prerequisite: a degree from an accredited institution is prerequisite to courses in Education numbered from 201 to 400.

108 Human Development, Learning, and Teaching (3)

Lecture (2) hours), conference (1 hour), field work (3 hours). Principles of effective teaching based on an understanding of human development and the nature of learning. Prerequisite: Psyc 22.

112 Educational Measurement (3)

Scope, needs, services to students, selection and construction of teacher-made tests, interpretation of tests for evidence purposes. Prerequisite: Educ 108 and 123.

113 Elementary School Art (3)

Lecture and laboratory (3 hours), field work as arranged. For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psyc 1 and 22. Material fee, \$5.

* Interdepartmental course offered by departments of Economics and History.
† War College Program only.

114 Elementary School Music (3)

For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psyc 1 and 22.

***115 Elementary School Teaching of Reading (3)**

Introduction to methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Educ 108 and 123, or teaching experience.

***116 Elementary School Social Studies (3)**

Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Educ 108 and 123, or teaching experience.

***117 Elementary School Science (3)**

Lecture (2 hours), field work (2 hours). Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Educ 108 and 123, or teaching experience.

***120 Elementary School Mathematics (3)**

Content, methods, materials, concepts of "new mathematics," and activities essential in the elementary school curriculum. Prerequisite: Educ 108 and 123, or teaching experience.

123 Society and the School (3)

Lecture (2 hours), conference (1 hour), field work (2 hours). Historical and social development of education at local, national, and international levels; cooperation of the school with other community agencies; functions of school personnel.

***128 Children's Literature (3)**

Lecture (2 hours), field work (2 hours). Newer books for children and the children's classics, contribution of literature to child development, children's original expressions.

136 Teaching English in Secondary Schools (3)

Lecture (2 hours), field work (2 hours). Prerequisite: Educ 108, 123, and 131, or adequate experience; 18 semester hours in English.

140 Teaching Mathematics in Secondary Schools (3)

Prerequisite: Educ 108, 123, and 131, or adequate experience; mathematics through calculus.

†205-6 The Curriculum (3-3)

For experienced teachers. Educ 205: curriculum foundations and issues, comparison of curriculum patterns. Educ 206: curriculum development in subject areas, group consideration of student problems.

†207 Curriculum Materials (3 to 6)

For experienced teachers. Construction of courses of study and classroom teaching aids, with direct application to students' situations.

* This course may not be taken by students who have completed or plan to enroll in Education 111.
† Prerequisite: adequate professional preparation.

***208 Human Development (3)**

Contribution of various disciplines to an understanding of human development throughout the life span; emphasis on practical implications of relevant research.

209 Child Development (3)

Interdisciplinary approach to child development. Analysis, interpretation, and practical implications for instruction of research in disciplines contributing to a knowledge of child development.

210 Adolescent Development (3)

Interdisciplinary approach to adolescent growth and development. Analysis, interpretation, and practical implications for instruction of research in disciplines contributing to a knowledge of the adolescent.

***212 Educational Measurement (3)**

Basic measurement techniques: construction, selection, administration, and interpretation of objective and essay-type examinations; statistical analysis of test results; laboratory use of test instruments.

213-14 History of Education (3-3)

Educ 213: European backgrounds of American education. Educ 214: evolution of the American school system.

***216 Education of Slow-learning Children (3)**

Identification, nature, and needs of slow-learning elementary and junior high school children. Emphasis on diagnosis and treatment of learning difficulties.

***217-18 Philosophy of Education (3-3)**

Educ 217: to help students formulate a personal philosophy of education. Educ 218: social foundations of education—forces that shape policies and offerings of the school.

***219 Elementary School Classroom Procedures (3)**

Current classroom practices; emphasis on planning, unit teaching, techniques in discipline; individual and group evaluation techniques, resources for learning, providing for individual differences.

***223-24 Reading Problems (3-3)**

Elementary and secondary school reading difficulties; classroom and clinical techniques in solving reading problems. Prerequisite: one or more years of recent teaching experience.

227 Basic Issues in Elementary Education (3)

Identification, definition, and analysis of some of the most important problems facing the contemporary American elementary school.

228 Instructional Areas in Elementary Education (3)

Objectives, organization, content, and teaching methods in language arts, arithmetic, social studies, science, arts and crafts, health and physical education.

* Prerequisite: adequate professional preparation.

***229 Administration of Elementary Education (3)**

For experienced teachers and administrators. Achieving instructional objectives, organizing and servicing teaching activities, coordinating school and community life.

***231 Secondary School Classroom Procedures (3)**

Current classroom practices: teacher-pupil planning, group procedures, initiatory and culminating activities, individual and group evaluation techniques, teaching aids, etc.; review of recent literature.

***241 Education of the Gifted (3)**

For classroom teachers. Nature and discovery of giftedness, provisions for the gifted in regular classes, experimental projects.

***243 Human Relations in the Classroom (3)**

Principles and practices involved in interpersonal relationships between learner and teacher and among learners.

245 School and Community (3)

The school as an important member of a team of social agencies that builds the community.

***251 Foundations of Guidance and Personnel Services (3)**

Introductory survey: definitions, scope, principles, historical background, organization, services, emerging trends, and issues.

252 Organization and Administration of Guidance Services (3)

For guidance directors, supervisors, and experienced school counselors who hope to qualify for such positions. Prerequisite: a minimum of 15 semester hours of approved graduate work in measurement and guidance.

253 Analysis of the Individual for Purposes of Counseling (3)

Detailed study of individual analysis and appraisal techniques. Development of systematic case study. Prerequisite: Educ 112 or equivalent.

***254 The Middle School (3)**

(Formerly The Junior High School)

Purposes, organization, core program, guidance, developing course of study, extra-classroom activities.

257 Educational and Occupational Development (3)

Theories of career development; structure of education, training, and work in the United States; sources, forms, collection, evaluation, and dissemination of educational-occupational information.

***260 Secondary School Supervision (3)**

For experienced teachers and administrators with two or more years of teaching experience. Review of modern supervisory concepts, including practices followed in the operation of the school.

263-64 Employee Development (3-3)

(Formerly Employee Training)

Educ 263: nature and purpose, review of major programs—orientation, supervisory, apprentice, clerical skills, communication. Educ 264: ad-

* Prerequisite: adequate professional preparation.

ministrative problems and practices, training media, coordination with other management functions. Prerequisite: adequate professional preparation or two years of experience in employee training.

265 Teaching Secondary School English—Materials, Resources, Content (3)

For experienced teachers. Review of curriculum patterns. Discussion of current and new approaches to course content. Offered in cooperation with the D.C. Public Schools.

267 Teaching Secondary School Social Studies—Materials, Resources, Content (3)

For experienced teachers. Review of curriculum patterns. Discussion of current and new approaches to course content. Offered in cooperation with the D.C. Public Schools.

271 The Teacher and School Administration (3)

Role of federal, state, and local administrative units; school finance; legal controls; school plant; public support; improving teaching conditions.

***272 The Teacher and School Supervision (3)**

Nature, organization, human relationships, and techniques.

***275 Seminar: School Finance (3)**

Educational financial theory, practice, and control, including methods of financing.

***276 Seminar: Public Relations in School Administration (3)**

Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy making.

***278 School Law (3)**

Sources and scope of school law; legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group.

***279-80 Adult Education (3-3)**

Educ 279: current concepts and objectives, agencies involved, programs on all levels—international through community. Educ 280: the adult as a learner, the teacher of adults, learning-teaching activities, administration of adult education programs.

***283 Higher Education in the United States (3)**

Development, scope, purposes, present status, programs and trends in higher education in the United States.

***284 Administration of Higher Education (3)**

Government, organization, and administration of colleges and universities.

291 Planning the School Plant (3)

Selection of sites; evaluation of existing buildings; utilization of present facilities; adaptation to curricular needs; building, operation, and maintenance problems.

* Prerequisite: adequate professional preparation.

***295 Research Methods and Procedures (3)**

Required of all candidates for graduate degrees in Education. To be taken early in the graduate program. Prerequisite: elementary course in statistics.

352 Advanced Career Development (3)

Advanced workshop for experienced counselors; theory and uses of new educational media in guidance; field study of job opportunities in area business, industry, and government agencies. Admission by permission of instructor.

355 Counseling in Groups (3)

For experienced counselors and psychologists. Peer-group relationships with emphasis on adolescent groups. Principles of group dynamics as related to interaction within groups. Techniques and practice in group counseling.

356 Seminar: Guidance and the Disciplines (3)

For experienced counselors. Exploring the foundations of guidance through the disciplines of psychology, sociology, economics, anthropology, and philosophy.

373 The Junior-Community College (3)

Development, organization, curriculum, role, issues, and problems of the junior-community college.

374 Current Issues in Higher Education (3)

Investigation of current issues in higher education.

381 The Adult as a Learner (3)

Psychology of learning as applied to adults; effect of age on learning; physical and social environment in adult education situations.

382 Methods in Adult Education (3)

Methods, techniques, and devices in adult education; traditional methods, developing action-oriented learning situations, programmed instruction, and systems approach in developing training materials.

English

Chairman: J.P. Reesing, Jr., Professor of English Literature; Stuart 410, Telephone: 676-6180

Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared for English 1 will be assigned to *Basic English*. In lieu of *Basic English*, off-campus students may, if they desire, be given permission to register for English 1x on campus. English 1 or 1x is prerequisite to all other courses in English.

* Prerequisite: adequate professional preparation.

ENGLISH COMPOSITION

X Basic English (0)

Instruction, drill, and exercises in grammar, vocabulary, spelling, and mechanics in general; instruction and exercises in composition and reading. This course is designed to prepare students for English 1. No academic credit. Tuition fee, \$94.

1 English Composition (3)

Analysis and practice of expository techniques with emphasis on unity, development, and organization; library research procedure.

1x English Composition (3) (Campus Course)

Intensive course in English grammar and composition for students inadequately prepared for English 1. Begins with detailed instruction, drill, and exercises in basic structure of the English language and in writing paragraphs; continues with content of English 1. English 1x meets five hours a week and carries 3 semester hours of credit. Total fee, \$217 (tuition fee of \$192 plus additional fee of \$25).

2 English Composition (3)

Readings and practice in expository and argumentative techniques and in research procedure. Prerequisite: Engl 1 or 1x.

11 The Writing of Reports (3)

Theory and practice in the writing of technical reports. Prerequisite: Engl 1 or 1x and 2.

WORLD LITERATURE

41-42 Introduction to World Literature (3-3)

Engl 41: a survey of Western literary heritage from Homer to Milton.
Engl 42: a review of Western literature from the English metaphysical poets to the present.

ENGLISH LITERATURE

51-52 Introduction to English Literature (3-3)

Historical survey. Prerequisite: Engl 1 or 1x.

91-92 Introduction to European Literature (3-3)

Consideration of various types. Prerequisite: Engl 1 or 1x.

AMERICAN LITERATURE

71-72 Introduction to American Literature (3-3)

Historical survey. Engl 71: from the beginnings to the Civil War. Engl 72: from the Civil War to present. Prerequisite: Engl 1 or 1x.

Epidemiology and Environmental Health

Chairman: J.W. Millar, Vivian Gill Professor of Epidemiology and Environmental Health; School of Medicine, Telephone 331-6117.

1 Principles of Environmental Health I (2)

Communicable disease: recognition, mode of spread, general methods of control, immunization, quarantine, disinfectants, and insecticides.

2 Principles of Environmental Health II (2)

Water, its relationship to man's well-being. Disposal of human wastes—excreta and refuse; atmospheric pollution.

3 Principles of Environmental Health III (2)

Food, housing (urban and rural), institutional sanitation, radiological sanitation, insect vector, and rodent control.

101 Environmental Sanitary Science I (2)

Water: general characteristics (urban and rural), treatment and distribution; public bathing place sanitation; design and function of water treatment facilities.

102 Environmental Sanitary Science II (2)

Recognition and control of environmental pollution. Treatment and disposal of human wastes—excreta, refuse, and air.

103 Environmental Sanitary Science III (2)

Dairy products and food sanitation; processing, storage, and distribution of food. Supervision and training of personnel involved with food and the food industry.

104 Environmental Sanitary Science IV (2)

Housing, urban and institutional; heating, ventilation, lighting, and noise. Study of federal and municipal regulatory aspects.

121 Environmental Biostatistics (2)

Statistical reasoning, collection of data, rates, incidence, and prevalence. Generalization of observations and use of measurement data.

122 Environmental Epidemiology I (2)

Infectious diseases: bacterial, viral, rickettsial, protozoal, and helminthic.

123 Environmental Epidemiology II (2)

Zoonoses, deficiency diseases, chronic disease, pneumoconiosis, mental health, maternal and child health.

131 Environmental Epidemiology III (1)

Venereal disease: etiology, clinical manifestation's diagnosis; prevention and control of syphilis, gonorrhea, chancroid, granuloma, inquinae, and LGV.

141 Public Health Entomology I (2)

How the arthropods affect man. Study of host-parasite vector relationships; principles of systematic biology and basic insect taxonomy and toxicology.

142 Public Health Entomology II (2)

Identification, life cycles, and bionomics of medically important insects and other arthropods.

143 Public Health Entomology III (1)

Study of chemical, biological, and mechanical control of all medically important arthropods.

144 Public Health Entomology IV (1)

Prevention and control of rodent infestation; identification, habits, and relationship to man.

151 Public Health Microbiology I (3)

Medical parasitology, protozoology (intestinal), the Haemosporidia (malaria), the Haemoflagellates and the metozoa (helminths) of medical importance.

152 Public Health Microbiology II (2)

Clinical bacteriology, characteristics and identification of the bacteria involved in disease, study of rickettsia and viruses.

153 Public Health Microbiology III (2)

Study and identification of the flora of water, dairy products, food, and the atmosphere.

154 Public Health Microbiology IV (1)

Mycology: study of medically important fungi, systematic mycoses and dermatomycoses.

171 Industrial Hygiene I (2)

Chemical hazards: study of diseases from chemical exposure, toxic dusts, metal fumes and vapors, gases, and organic compounds.

172 Industrial Hygiene II (2)

Physical hazards: biological effects of low and high temperatures, radiation (electromagnetic, ultraviolet, ionizing), illumination, sound, pressure, and atmospheric pollution.

191 Public Health Administration I (1)

Activities and organization; philosophy, background, and development. Public health activities include vital statistics, laboratory services, education, nursing, and social services.

192 Public Health Administration II (1)

Administrative considerations, including governmental aspects, legal considerations, fiscal management, personnel factors, and public relations in public health organizations.

French*

Chairman: J.F. Burks, Associate Professor of French; A-11, Telephone 676-6330

1-2 First-year French (3-3)

A year course: credit toward a degree at this University given on completion of French 2. For beginners. Pronunciation, conversation, grammar, composition, reading of modern French prose.

3-4 Second-year French (3-3)

A year course: credit toward a degree at this University given on completion of French 4. Conversation, grammar, composition, reading in modern French prose, introduction to French civilization. Prerequisite: French 1-2, or two years of high school French.

51-52 Survey of French Literature and Civilization (3-3)

Social, artistic, and cultural background of French literature. Lectures, readings, recitations, and informal discussions.

Geodesy†

Program Adviser: Hyman Orlin, Professorial Lecturer in Mathematics; Telephone 496-8720

12 Plane Surveying (3)

Theory and practice in measurement of distances, angles, and elevations; traversing, leveling, and triangulation; stadia surveying, plane coordinate computations, and miscellaneous surveying problems. Prerequisite: Mathematics 6 or equivalent.

13 Geodetic Surveying (3)

Elements of geodetic and hydrographic surveys; electronic measurements, triangulation, trilateration, and precise traverses; geodetic leveling and precise trigonometric leveling; introduction to geodetic astronomy and to least squares adjustment. Prerequisite: Geod 12, Math 21 or 31.

17 Elementary Photogrammetry (3)

Fundamentals of aerial photography, photogrammetric optics and photographic processes; mathematics of vertical and tilted photographs; stereoscopy and parallax; planning and executing the photogrammetric project; radial triangulation methods; photomaps; oblique and terrestrial photography. Prerequisite: Cart 2, Geod 12.

18 Intermediate Photogrammetry (3)

Basic photogrammetry theory and practice. Stereoscopic plotting instruments; graphical and computational methods for adjusting strips of aerotriangulation; electronic computers. Method of least squares applied to photogrammetry. Prerequisite: Geod 17, Math 21 or 31.

110 Map Projections (3)

Mathematics of projections: geometry of sphere and ellipsoid; distortions; conic, cylindrical, and azimuthal projections; geodetic projections. Prerequisite: Cart 2, Geod 12, Math 24 or 33.

* Administered by the Department of Romance Languages and Literatures.
† Administered with the Department of Mathematics.

117 Advanced Photogrammetry (3)

Analytic photogrammetry. Prerequisite: Geod 18, Math 24 or 33.

155 Elementary Geodesy (3)

Principles and formulas basic to theoretical and applied geodesy, with application to special problems; computations on an ellipsoid, gravimetry, deflection of the vertical and Laplace's equation, introduction to satellite geodesy. Prerequisite: Geod 13, Math 23 or 33, Phys 30.

156 Geodetic Astronomy (3)

Principles and formulas for the astronomic determination of longitude, time, azimuth, and latitude; star catalogues; observing and time recording instruments; practice in observing and computation. Prerequisite: Geod 155.

160 Mathematics of Adjustments and Least Squares (3)

Types and distribution of errors, Gaussian and Poisson distributions, fundamentals of matrix algebra with special emphasis on least squares adjustment of geodetic networks. Prerequisite: Geod 155, Math 111.

161 Adjustments in Geodesy and Photogrammetry (3)

Advanced adjustment theory. Prerequisite: Geod 160.

Geography and Regional Science

Chairman: Marvin Gordon, Associate Professor of Geography and Regional Science: I-200, Telephone: 676-6185

51 Introduction to Geography (3)

Interrelated processes affecting the character of landforms, hydrography, soils, vegetation, and climate; relevance of their world patterns to man.

52 World Regions (3)

Survey of major countries, synthesis and analysis of major world regions.

125 Transportation Geography (3)

(Formerly Transportation Complexes)

Problems of interaction, diffusion, and information transfer as they appear in a spatial context.

126 World Economic Geography (3)

World patterns and processes underlying the areal structure of selected economic activities.

127 World Population and Settlement (3)

Patterns of world population; factors contributing to population pressures, growth, and migrations.

132 Natural Resources (3)

Implications for society of the areal variations in natural resources and methods of resource use

141 Urban Settlement (3)

Location, functions, and forms of cities; urban-rural relationships; urban problems and the history of their development.

146 World Political Geography (3)

Types and distributions of political systems, the major political units and associations of the world, factors which affect relative political power, areas of conflict and arbitration.

148 Principles of Geography (3)

Study of geographic principles, technology and tools designed to meet specific needs of teachers. Emphasis on the practical application of geographic concepts and the use of source materials in the classroom.

149 Principles of Photographic Interpretation (3)

Fundamentals of aerial photographic interpretation, survey of the applications of imagery application, introduction to nonoptical image forming systems.

168 Arctic Regions (3)

Human and physical aspects of the Arctic regions with respect to natural environment and potential resources, present state of development and special problems encountered. Given in cooperation with the Arctic Institute of North America.

Geology

Chairman: Geza Teleki, Professor of Geology; Bell 3, Telephone: 676-6190

1-2 Introductory Geology (3-3) (Campus Course)

Lecture (2 hours), laboratory (2 hours), field trips as arranged. Survey covering the principles of geology. Laboratory fee, \$10 a semester.

3 Introductory Geology (3)

Survey covering the principles of geology. Nonlaboratory course for off-campus students only.

4 Introductory Geology (3)

Geological periods, evolution of life on earth. Nonlaboratory course for off-campus students only. Prerequisite: Geol 1 or 3, or permission of instructor.

125 Marine Geology (3)

Lecture and map work. Principles of oceanography and submarine geology; geology of the deep sea; topography, crustal structure, sedimentary processes, and marine environment. Prerequisite for geology majors: Geol 1-2; for students in fields other than geology, permission of instructor.

141 Introductory Geochemistry (3) (Campus Course)

Lecture (2 hours), laboratory as arranged. Principles and theories on the abundance, relationships, and distribution of the elements in various rock and mineral species. Prerequisite: Geol 115 or equivalent; Chem 11-12; Math 21 or 31; Phys 1, 2. Laboratory fee, \$12.

Geophysics*

Program Adviser: Hyman Orlin, Professorial Lecturer in Mathematics; Telephone: 496-8720

105 Elementary Geophysics (3)

Introduction to geophysics; origin of the earth, geochronology, seismology, gravity, and geomagnetism. Prerequisite: Geol 1 or 3, Math 22 or 32.

106 Interpretation Theory—Geophysics (3)

Development of mathematical and physical foundations for interpreting seismic, gravimetric, and magnetic data. Prerequisite: Geop 105, Ocea 102, Math 24 or 33.

115 Elementary Seismology (3)

Principles of seismographs; analysis of stress and strain, interpretation of earthquake seismograms, location of earthquakes; seismic waves in the earth and the structure of the earth's interior as deduced from geophysical data, earthquake magnitude energy and intensity, seismic risk and the effects of earthquakes, review of earthquake activity throughout the world. Prerequisite: Geop 105.

Germanic Languages and Literatures

Chairman: L.G. Seeger, Associate Professor of German; Rice 408, Telephone 676-6195

1-2 First-year German (3-3)

A year course: credit toward a degree at this University given on completion of German 2. Essentials of German grammar; translation of easy prose.

3-4 Second-year German (3-3)

A year course: credit toward a degree at this University given on completion of German 4. Selections from modern German prose; continuation and review of grammar. Prerequisite: Germ 1-2 or two years of high school German.

9-10 German Conversation and Composition (3-3)

51-52 Introduction to German Literature (3-3)

Health Care Administration

Chairman: Leon Gintzig, Professor of Hospital Administration; CC-11, Telephone: 676-6220

153-54 Survey of Health Care Organization and Procedures (3-3)

Primarily for students who wish an over-all knowledge of organization and procedures used in health care policies, hospitals, and long-term care facilities. Not open to Master's candidates in Health Care Administration.

* Affiliated with the Department of Mathematics.

202 Introduction to Health Care Administration (3)

Lecture and discussion (2 hours), laboratory (2 hours). Survey of state, national, and community health services; includes medical terminology, communicable diseases, environmental sanitation, and biostatistics.

203 Organization and Management (3)

Lecture and discussion (2 hours), laboratory (2 hours). History and current character of institutional health care. Organizational functions and structure of various kinds of facilities related to health care administration. Prerequisite or concurrent registration: B&PA 201.

205 Hospital Management Procedures (3)

Lecture and discussion (2 hours) laboratory (2 hours). Departmental administration. Survey of hospital law; hospital forms, procedures, and systems; and hospital programs pertaining to disaster relief, safety, fire prevention.

209 Health Care Economics and Financial Management (3)

Lecture (2 hours), laboratory (2 hours). Economic and financial analysis of the interactions between consumers of health care, providers of health care, and public and private prepayment and insurance programs. Industry price structure and the long- and short-term capital requirements of health care institutions.

250 Administration for Mental Care (3)

Special characteristics of administration required in mental hospitals, psychiatric sections of general hospitals, mental health clinics, and others.

History

Chairman: R.H. Davison, Professor of European History; Stuart 416, Telephone: 676-6230

Departmental prerequisite: History 39-40 or 91-92 is prerequisite to courses 108 through 158 and 187 through 196; History 71-72, to courses 167 through 185; either History 39-40, 71-72, or 91-92, to courses 162 through 166. Prerequisite to History 105-6 is either History 39-40, 91-92, or a background in a science.

39-40 European Civilization in Its World Context (3-3)

Primarily for freshmen. Hist 39: political, social, economic, and cultural history from ancient times to early modern era. Hist 40: from early modern era to present. Students cannot receive credit for both History 39-40 and 91-92.

71-72 Introduction to American History (3-3)

(Formerly Civilization of the United States)

Primarily for sophomores. Hist 71: political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865. Hist 72: from 1865 to present.

91-92 World Civilizations (3-3)

Hist 91: major civilizations of the world to 1500. Hist 92: Europocentric and world civilization since 1500. Students cannot receive credit for both History 39-40 and 91-92.

145-46 History of Russia (3-3)

Rise and revolution of Russia. Hist 145: the Old Regime, 860-1900. Hist 146: Revolution and Soviet rule, since 1881.

149-50 European Diplomatic History (3-3)

The European state system; diplomatic practices and relations since the Congress of Vienna; emphasis on policies and actions of the great powers and their statesmen. Hist 149: to 1890. Hist 150: since 1890. Students cannot receive credit for both History 150 and 157.

163-64 History of Latin America (3-3)

Political, social, and cultural development. Hist 163: through independence. Hist 164: the national period.

***179-80 U.S. Economic History (3-3)**

Process of economic growth from Colonial times to the present. Development of various sectors in the economy—such as agriculture, transportation, manufacturing, and banking—and their interdependence. Hist 179: 1607-1865. Hist 180: 1865 to present.

181-82 U.S. Diplomatic History (3-3)

Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; activities of American secretaries of state and diplomatic agents. Hist 181: to 1898. Hist 182: since 1898.

195-96 History of East Asia (3-3)

Civilizations of China and Japan; emphasis on cultural development and social organization. Hist 195: beginnings to about 1800. Hist 196: traditional societies on the eve of the modern era, their responses to Western cultural influences since the mid-19th century.

245-46 Research Seminar: Russia and Europe (3-3)

Prerequisite: Hist 145-46 or equivalent.

281-82 Research Seminar: U.S. Diplomatic History (3-3)

Prerequisite: Hist 181-82 or equivalent.

Humanities

Faculty Adviser: J.H. Coberly, Professor of American Literature; Stuart 405, Telephone: 676-6630

1-2 Humanities in the Modern World (3-3)

Interdisciplinary study of modern Western thought from the Renaissance to the 20th century. Reading and intensive class discussion of five works each semester from the following authors: Machiavelli, Pope, Voltaire, Rousseau, Goethe, Tolstoy, J.S. Mill, Zola, Nietzsche, Kierkegaard, Freud, Kafka, Koestler, T.S. Eliot. Background lectures on the major intellectual, artistic, economic, and social movements.

3-4 Classical Humanities (3-3)

Interdisciplinary study of the thought of Greece and Rome. Reading and intensive class discussion of five works each semester from the following authors: Homer, Hesiod, Aristophanes, Plato, Aristotle, Aeschylus, Euripides, Sophocles, Herodotus, Thucydides, Lucretius, Marcus Aurelius, Epictetus, Polybius, St. Augustine. Background lectures on the major intellectual, artistic, economic, and social movements.

International Affairs*

Faculty Adviser: B.M. Sapin, Professor of International Affairs and Political Science: Building T, 1st floor, Telephone: 676-6240

International Affairs 256, 260, 261, 262, 263, 270, 287, 297, and 299-300 are offered only in the War Colleges' curricula.

99-100 Research (3-3)

160 **Insurgency: Communist Doctrine and Its Application (3)**

161 **Internal Security: the Response to the Communist Insurgency (3)**

162 **Totalitarian Control over Populations (3)**

256 **Diplomacy Between the World Wars (3)**

260 **Fundamentals of National Power (3)**

261 **International and U.S. Foreign Policy (3)**

262 **National Security Policy of the United States (3)**

263 **Intercultural Relations (3)**

270 **Current Economic Problems (3)**

287 **Power Politics in the Pacific (3)**

297 **Readings in International Affairs (1, 2, or 3)**

299-300 **Thesis Research (3-3)**

Italian†

Chairman: J.F. Burks, Associate Professor of French; A-11, Telephone: 676-6330

1-2 First-year Italian (3-3)

A year course: credit toward a degree at this University given on completion of Italian 2. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Italian prose.

Administered by the School of Public and International Affairs.
Administered by the Department of Romance Languages and Literatures.

3-4 Second-year Italian (3-3)

A year course: credit toward a degree at this University given on completion of Italian 4. Conversation, grammar, composition, reading in modern Italian prose, introduction to Italian civilization. Prerequisite: Ital 1-2 or two years of high school Italian.

51-52 Introduction to Italian Literature (3-3)

Prerequisite: Ital 4 or equivalent.

Journalism

Chairman: R.C. Willson, Associate Professor of Journalism; Library 407, Telephone: 676-6225

146 Government Information (3)

Growth of information activities in government and the role of the information specialist. Writing and editing for government information operations.

Latin American Civilization—Special Program

Program Director: R.C. Burns; Building E, Telephone: 676-7049

Faculty Consultants: C.E. Galbreath, Professor of International Economics; Marvin Gordon, Associate Professor of Geography and Regional Science; W.H. Kraus, Professor of Political Science; J.W. Robb, Professor of Romance Languages; Mario Rodriguez, Professor of Latin American History; H.M. Stout, Professor of International Affairs and Political Science

101 Latin American Civilization (3)

A three-week, University-conducted study program in a selected area in Latin America, effecting a broad synthesis of history, politics, economy, geography, language, and literature in order to achieve an understanding of contemporary problems and assess national attitudes in the light of world relations. On-the-spot seminars, guest lectures at universities, instructional visits to government offices, first-hand observation of each country and the operation of its economy, comparisons and contrasts among the countries of the area. May be repeated for credit.

Mathematics

Chairman: Hewitt Kenyon, Professor of Mathematics; Monroe 422, Telephone: 676-6235

No Mathematics courses numbered 1 to 100 are available for college credit if the student's previous training in mathematics meets the prerequisite for a higher numbered course.

Graduate credit may not be given for Mathematics courses numbered from 101 to 200 without the permission of the Chairman of the Department.

Departmental prerequisite: Mathematics 24 or 33 is prerequisite to courses in Mathematics from 101 to 200. Exception to this regulation may be made for Mathematics 101, 122, and 124. Students anticipating a substantial concentration in mathematics should consult with the Department about early completion of these courses.

3 College Algebra (3)

Equivalent to second-year high school algebra. Prerequisite: one year each of high school algebra and high school geometry.

6 Plane Trigonometry (3)

Prerequisite: two years of high school algebra and one year of high school geometry, or Math 3 (or concurrent registration therefor).

9 General Mathematics I (3)

For students electing Mathematics 9 and 10 as a terminal sequence. Logic, sets, number systems. Prerequisite: two years of high school mathematics.

10 General Mathematics II (3)

Statistics and probability, exponents and logarithms, trigonometry. Prerequisite: Math 9.

15 Finite Mathematics I (3)

Introduction to logic, sets, and probability. Prerequisite: two years of high school mathematics.

16 Finite Mathematics II (3)

Vectors and matrices, mathematics of finance and accounting, linear programming, introduction to game theory. Prerequisite: Math 15.

***21 Calculus I (3)**

Elementary concepts of analytic geometry, Differentiation of algebraic functions with applications. Prerequisite: Math 3 and 6; or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry; or equivalent.

***22 Calculus II (3)**

Differentiation and integration of transcendental functions and applications, topics in analytic geometry, techniques of integration. Prerequisite: Math 21.

***23 Calculus III (3)**

Techniques of integration, vector concepts, improper integrals, polar coordinates, infinite series. Prerequisite: Math 22.

***24 Calculus IV (3)**

Solid geometry, multiple integration and partial differentiation with applications, line and surface integrals, differential equations. Prerequisite: Math 23; with departmental permission, students may register concurrently in Math 23 and 24.

* Beginning with the fall semester, 1969, the sequence Mathematics 21, 22, 23, and 24 will be replaced at the rate of one course a semester with Mathematics 30, 31, 32, 33, and 34.

***30 Precalculus (3)**

Logic, set theory, real number system, inequalities, basic analytic geometry, functions and relations. Polynomial, trigonometric, logarithmic, and exponential functions. Prerequisite: Math 3 and 6; or one and one-half years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry; or equivalent.

***31 Calculus of One Variable (3)**

Differentiation and integration of algebraic and elementary transcendental functions, with simple applications. Prerequisite: Math 30 or equivalent.[†]

***32 Calculus of Several Variables (3)**

Partial derivatives, multiple integrals, infinite series. Prerequisite: Math 31.

***33 Calculus of Vector Functions (3)**

Elementary linear algebra, vectors, and matrices. Vector calculus, implicit function theory. Prerequisite: Math 32.

***34 Introduction to Linear Algebra (3)**

Linear functions, solutions of equations, dimension and rank, determinants, eigenvalues, quadratic forms, change of basis. Prerequisite: Math 31 or permission of instructor.

111 Mathematics for Engineers and Physicists I (3)

Differential equations, linear algebra.

112 Mathematics for Engineers and Physicists II (3)

Fourier series, Laplace transformation, partial differential equations. Prerequisite: Math 111.

124 Introduction to Matrix Theory (3)

Elementary theory of finite vector spaces, determinants, equivalence, matrices with polynomial elements, similarity of matrices.

134 Introduction to Boundary Value Problems (3)

Prerequisite: Math 111 or 142.

139 Advanced Calculus I (3)

Review and extension of elementary one-variable calculus, emphasis on the theoretical foundations.

140 Advanced Calculus II (3)

Calculus of several variables. Prerequisite: Math 139 or equivalent.

153 Introduction to Numerical Analysis (3)**171 Vector Analysis (3)**

^{*} Beginning with the fall semester, 1969, the sequence Mathematics 21, 22, 23, and 24 will be replaced at the rate of one course a semester with Mathematics 30, 31, 32, 33, and 34.
[†] Mathematics 30 may be waived as a prerequisite requirement by examination on scheduled dates.

Music

Chairman: George Steiner, Associate Professor of Music; FF-10, Telephone: 676-6245

3 Introduction to Music (3)

Introductory history of musical styles, related to listening; elements and materials of music.

4 Survey of Music Literature (3)

Introductory study of musical forms, structures, and textures; aural analysis of selected literature.

Oceanography*

Program Adviser: Hyman Orlin, Professorial Lecturer in Mathematics; Telephone: 496-8720

101-2 Elementary Oceanography (3-3)

Chemical and physical properties and composition of sea water, heat budget, distribution of variables, statics, dynamics, water masses, general circulation of the oceans, underwater sound, propagation of light, submarine topography, sea floor deposits, biological classifications, and marine ecology. Spectrum of ocean waves from capillary through tidal, including internal waves. Observations and reduction; history and interrelationships between marine sciences. Prerequisite to Ocea 101: Math 21 or 31, Phys 1. Prerequisite to Ocea 102: Geol 1 or 3.

110 Ocean Dynamics (3)

All aspects of physical oceanography except waves and tides. Subjects of physical and chemical properties of sea water, underwater sound, and propagation of light. Emphasis on hydrodynamic equations, statics and kinematics, currents, heat budget, turbulence, and the general circulation and water masses of oceans. Prerequisite: Math 22 or 32, Ocea 101.

111 Ocean Waves and Tides (3)

All aspects of waves and tides; survey of tidal theory and analysis. Prerequisite: Math 24 or 33, Ocea 102.

112 Biological Oceanography (3)

Biological science as related to marine environment. Prerequisite: Ocea 102.

113 Marine Geophysics (3)

(Formerly Marine Seismology)

Principles of geophysical measurements and interpretation, earthquake seismology, sound propagation, seismic refraction, and reflection at sea. Elastic wave propagation considerations in liquid and solid media. Sound transmission with special application to SOFAR channel studies. Selected reflection and refraction studies offshore; geophysical investigations of some selected trenches. Instruments. i.e., Precision Depth Recorder (PDR),

*Affiliated with the Department of Mathematics.

etc. A description of the specialties in the discipline of earthquake seismology and their application in furthering knowledge of the earth's interior. Prerequisite: Geop 105, Phys 1; or permission of instructor.

114 Chemical Oceanography (3)

Chemical processes in the marine environment, including composition of sea water, nutrients, natural composition, and variation, carbonate cycle, geochemistry, and extraction. Prerequisite: Chem 12, Ocea 101.

Philosophy

Chairman: Thelma Z. Lavine, Elton Professor of Philosophy; Rice 602, Telephone 676-6266

51-52 Introduction to Philosophy (3-3)

Problems of modern philosophy in relation to scientific and social developments since the Renaissance. Phil 51: theories of knowledge. Phil 52: theories of reality. Philosophy 51 or 52 may be taken independently.

Physical Education

Chairman for men: V.J. DeAngelis, Professor of Physical Education for Men; S-11, Telephone: 676-6250

Chairman for women: Loretta Stallings, Professor of Physical Education for Women; K-20, Telephone: 676-6280

*5 Physical Education Activities (1) (men)

Two periods of supervised activity a week. May be repeated for credit not to exceed 4 semester hours.

*6 Physical Education Activities (1) (women)

Classes for first-year students meet three periods a week in activities recommended on the basis of the physical education placement test; classes for second-year students meet two periods a week and are chosen from the activities offered each semester. May be repeated for credit not to exceed 4 semester hours.

101 Physical Education in the Elementary School (3)

For Elementary Education and Physical Education majors. Implications of child growth and development for school and playground programs: philosophy, curriculum, techniques of teaching, facilities and equipment evaluation.

215 Administration of High School Athletics (3)

Open only to majors in Physical Education. Lecture (2 hours), conference (1 hour). For the prospective high school athletic director. The philosophy, principles, and procedures essential for the administration and development of a sound athletic program.

* A Physical Education fee of \$4.50 a semester is required for registration in one or more of the activity courses.

258 Safety Education Care and Prevention (3)

Care and prevention of athletic injuries, school safety, first aid, and liability. Leads to Instructor Certification in First Aid.

263 Basic Simulation—Driver Education (3)

Orientation and psychological foundations of simulator instruction. Operation, care, and preventive maintenance; organization and administration of a driver education simulator program.

Physics

Chairman: Julian Eisenstein, Professor of Physics; Corcoran 102, Telephone: 676-6275

Departmental prerequisite: Physics 31–32 or equivalent, and consent of a departmental adviser, are prerequisite to all courses in Physics numbered from 101 to 200.

1 General Physics (4) (Campus Course)

Topics in classical physics which form a foundation for modern physics.

Prerequisite: two years of college preparatory mathematics or concurrent registration for Math 6. Laboratory fee, \$11.

2 General Physics (4) (Campus Course)

Electricity, magnetism, and selected topics from modern physics. **Prerequisite:** Phys 1 or equivalent. Laboratory fee, \$11.

9–10 Introduction to Astronomy (3–3) (Campus Course)

Lecture (2 hours), laboratory (2½ hours). Classical through modern astronomy with introduction to basic principles underlying astronomical systems and observations. Primarily for nonscience majors. Laboratory fee, \$11 a semester.

30 Introductory Modern Physics (4) (Campus Course)

Introduction of concepts in modern physics and laboratory techniques necessary for the more advanced work in Physics 31 through 52. **Prerequisite:** Phys 1 or equivalent and one semester of calculus. Physics 1 may be waived on the basis of the College Entrance Examination Board Achievement Test or by a departmental examination prior to registration. Laboratory fee, \$11.

31–32 Introduction to Theoretical Physics (2–2) (Campus Course)

Theoretical structure of physics, emphasis on appropriate analytical techniques. **Prerequisite:** two semesters of calculus and Phys 30.

51–52 Introduction to Experimental Physics (2–2) (Campus Course)

Experiments and lectures on the basic phenomena of physics and techniques of experimentation. **Prerequisite:** Phys 2 or 30, and two semesters of calculus. Material fee, \$11 a semester.

161 Mechanics I (3) (Campus Course)

Mechanics of mass points and rigid bodies. Newton's laws, conservation laws, Euler's equations, inertia tensor, small vibrations, and elements of Lagrange's and Hamilton's equations.

162 Mechanics II (3) (Campus Course)

Basic aspects of elasticity and fluid dynamics, strain tensor, stress tensor, equations of equilibrium, elastic waves, ideal and viscous fluids.

163 Optics (3) (Campus Course)

Oscillations and waves, energy and momentum of the electromagnetic field, interference, diffraction, geometrical optics, optics of crystals and other media, dispersion.

Political Science

Chairman: W.H. Kraus, Professor of Political Science; Government 403, Telephone 676-6290

Departmental prerequisite: Political Science 5-6 is prerequisite to courses in Political Science numbered from 101 to 200.

5-6 Introduction to Political Science (3-3)

P Sc 5: structure, powers, and processes of the American political system—Congress, the President, and the Supreme Court; elections, political parties, and pressure groups; state and local government. P. Sc 6: nature and study of politics—theories, forms, and processes of political systems; international relations and political ideologies.

103 Metropolitan Government and Politics (3)

Political changes and processes in metropolitan areas; emphasis on regional and sub-regional government institutions.

111 Comparative Government and Politics (3)

Introduction to the government and politics of the principal constitutional democracies of Western Europe: Great Britain, France, and the Federal Republic of Germany; secondary reference to other West European systems and the communist government of East Germany.

***112 Comparative Government and Politics (3)**

Introduction to the government and politics of the communist nations; emphasis on the Soviet Union and the countries of Eastern Europe.

121-22 U.S. Constitutional Law and Politics (3-3)

P Sc 121: separation of powers, federal-state relationships, economic regulation. P Sc 122: political and civil rights.

125 Legislative Organizations (3)

Congress: constitutional aspects, legal analysis of make-up, political organization. Political and parliamentary procedures used in the preparation and enactment of legislation.

126 The American Presidency (3)

Role of the Presidency in public policy formulation; development of the institution; the selection process; emphasis on legislative-executive relations.

* Political Science 112, 115, and 161 are related in their subject matter, and credit for only one of the three may be applied toward a degree.

145 Political Parties and Politics (3)

Organization and operation of political parties in the United States: party system and structure, role of ideology, voting behavior, campaigns and elections, devices for organizing the government.

146 Political Pressures and Public Reactions (3)

Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy.

151 Public Administration (3)

Theory and practice of governmental administration and its relation to other public and private organizations and interests; introduction to organization theory and behavior.

167 U.S. Foreign Policy (3)

Constitutional and political factors that determine the formulation, execution, and substance of U.S. foreign policy.

171 International Politics (3)

International actors, international and domestic environments of foreign policy, global and regional patterns, general characteristics of foreign policy.

172 International Organization (3)

Development and operations of the United Nations, regional organizations, and functional international organizations.

181-82 Public International Law and Organization (3-3)

Survey of the public law of nations. P Sc 181: emphasis on the law of peace. P Sc 182: attention to neutrality and the so-called law of war.

190 Politics of Middle and Southern Africa (3)

Comparative analysis of the political systems of selected countries of non-Mediterranean Africa.

191 Governments and Politics of the Middle East (3)

Domestic and international politics of the eastern Arab states, Turkey, Iran, and Israel.

192 Governments and Politics of North Africa (3)

Domestic and international politics of Algeria, Tunisia, Morocco, Libya, Egypt, Sudan; their relations with states of the Middle East.

193 Governments and Politics of South and Southeast Asia (3)

Domestic and international politics of the major states in the area, particular reference to India.

194 Governments of China and Japan (3)

Institutions and processes of the government of contemporary China and Japan, with some historical background. Attention to ideological forces. Students cannot receive credit for both Political Science 194 and 162.

212 Seminar: Comparative Government and Politics (3)

Selected topics in comparative political institutions and politics. Each semester is devoted to a selected country or significant institutional or policy problem. Attention is directed to questions of method.

233 Seminar: Soviet Government and Politics (3)

Research seminar in selected problems of Soviet domestic government and politics. Emphasis: since Stalin. Prerequisite: P Sc 229 or permission of instructor.

271-72 Problems in International Organizations (3-3)

P Sc 271: analysis of the political dimension of international organizations; special reference to the United Nations. P Sc 272: examination of the operational and administrative aspects of international organizations. special reference to regional and functional bodies.

***283 Topics in International Law (3)**

Consideration of theory, problems, and cases in the public law of nations including the law of peace and the law of war.

***285 Diplomacy since World War II (3)**

Recent changes in diplomatic procedures and objectives as compared with those of earlier periods.

299-300 Thesis Research (3-3)

Psychology

Chairman: B.I. Levy, Professor of Psychology; Monroe 405, Telephone: 676-6320

Departmental prerequisite: Psychology 1 or 5 or 6 is prerequisite to all other courses in Psychology. Six semester hours in Psychology courses are prerequisite to Psychology courses numbered above 100.

1 General Psychology (3)

Fundamental principles underlying human behavior.

8 Psychology of Motivation and Personality (3)

Introduction to psychology of personality. Principles of motivation, personality development, social and cultural factors, assessment and description of personality emphasized.

22 Introduction to Educational Psychology (3)

Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training.

29 Psychology of Childhood (3)

Developmental approach to study of the child. Emphasis on the socialization process, learning, and the child's view of the world.

101 Abnormal Psychology (3)

Causes, diagnosis, treatment, and prevention of various types of maladjustments and mental disorders. Prerequisite: 6 semester hours in psychology, or 3 in psychology and 6 in a biological science.

112 Psychology of Adolescence (3)

Psychological characteristics and problems peculiar to adolescence, with emphasis on applications of psychology to solution of such problems.

* Offered in War College programs only

- 121 Psychology of Learning (3)**
Current learning theories and issues.
- 129 Motivational Factors in Personality (3)**
Survey of basic principles and assessment techniques, with emphasis on applications to counseling.
- 131 Psychological Tests (3)**
Survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, \$7.
- 144 Personnel and Industrial Psychology (3)**
Psychological concepts and methods applied to problems of personnel management, human engineering, employee motivation, and productivity.
- 145 Psychology of Management (3)**
Introduction to principles of industrial organizations and personnel selection. Departmental prerequisite waived.
- 151 Social Psychology (3)**
Social foundations of attitudes and behavior: cognition, motivation, role-behavior, communication, small-group processes, racial attitudes, nationalism, and war.
- 156 Psychology of Attitudes and Public Opinion (3)**
Psychology of opinion formation, measurement of opinion, social determinants of attitudes, psychological processes in propaganda, bases of receptivity of propaganda, psychological warfare.

Public Administration

Chairman: K.E. Stromsem, Professor of Public Administration; Government 201,
Telephone: 676-6295

- 213 Administration in Government (3)**
Critical analysis of federal administrative organizations as an integral part of the political system. Roles of Congress, the Presidency, the Courts, interest groups, political parties, and the public in the administrative process; special attention to centripetal and centrifugal forces.
- 215 Comparative Administrative Systems (3)**
Examination and analysis of the administrative systems of selected foreign governments; attention to practices applicable to administration in the United States.
- 218 Seminar: Developmental Administration II (3)**
Problem of the transfer of administrative capability from one country to another. Political and administrative development. Unilateral and multi-lateral approaches. The role of the innovator. Strategies of administrative development.
- 221 Management in the Executive Branch (3)**
Analysis of application of management theory and practice in the Executive Branch of the Federal Government, emphasis on staff responsibilities and relationships and internal organization and control.

223 Behavioral Factors in Large Organizations (3)

Analysis of the nature and characteristics of bureaucracy; dysfunctionism; approaches to policy guidance and leadership, particularly in large public organizations; influence and control systems.

231 Public Personnel Administration (3)

Survey of basic principles and functions of personnel administration in the public service. Roles of personnel management, recruitment, placement, wage and salary administration, training, retirement, and other personnel functions.

232 Problems in Public Personnel Management (3)

Analysis and evaluation of major personnel management problems in government; employee-management relations; interagency and intergovernmental relationships. Impact of automation. Evaluation of personnel systems.

233 Seminar: Manpower Development and Utilization (3)

Analysis of manpower resources. Research projects and case studies in ways and means of increasing employee potential; use of training programs, executive development, incentive systems.

235 Technological Change and Manpower (3)

Research, discussion, and readings dealing with manpower problems arising from automation and other technological changes. Evaluation of these developments in government and business; their implications for productivity, employment, training and education, and personnel and industrial relations. Analysis of economic, political, and social factors influencing public and private industry manpower policies.

246 Urban Dynamics (3)

Forces that lie behind economic decisions which in turn determine the development of cities.

248 Financing Metropolitan Services (3)

Analysis of the structure and administration of public finance of local governments.

249 Administration in Metropolitan Area Governments I (3)

Examination of public administration at the local level. Developments and trends growing out of the changing urban pattern.

250 Administration in Metropolitan Area Governments II (3)

Examination of newly emerging political and social groups in metropolitan areas and their relations to governmental administration. Examination of federal programs in metropolitan areas. Prerequisite: P Ad 249 or permission of instructor.

251 Governmental Budgeting (3)

Survey of the basic concepts, principles, and practices in governmental budgeting; interrelationship of planning, programming, and budgeting; their role in the management process.

- 252 Problems in Planning, Programming, and Budgeting (3)**
Intensive analysis of developments in federal planning, programming, and budgeting; application of new tools in the decision-making process; evaluation of the systems.
- 254 Seminar: Financial Management in the Federal Service (3)**
Functions and interrelationships of central federal financial management agencies, their policy, economic and managerial roles, controllership functions, and standards and practices in financial management.
- 260 Seminar: Policy Formulation and Administration (3)**
Analysis in depth of factors and processes involved in policy development, with particular attention to selected areas of national policy; development of agency goals and objectives.
- 261 The Public and the Administrator (3)**
Nature of the public interest, ways of determining public opinion, public opinion and the decision-making process, theories and methods of working with the public, interest groups, public relations and information programs.
- 262 Seminar: Science, Technology, and Public Policy (3)**
The impact of science and technology upon public administration in terms of both administrative practice and national policies.
- 298 Case Studies in Public Administration (3)**
Analysis and discussion of problems in public management by use of the case method.
- 299 Thesis Seminar (3)**
Examination of thesis standards, research philosophy and methodology.
- 300 Thesis Research (3)**

Religion

Chairman: R.G. Jones, Professor of Religion; O-12, Telephone: 676-6325

- 9 The Old Testament (3)**
Historical and literary study of the Old Testament with consideration of development of religious ideas, institutions, and outstanding personalities.
- 10 The New Testament (3)**
Study of New Testament literature from the standpoint of occasion, purpose, dominant ideas, and permanent values. Emphasis on approach, structure, and significance of the Gospels and Epistles.
- 21 Introduction to Religious Thought (3)**
Traditional religious concepts, language of contemporary religion amidst modern scientific and secular intellectual tendencies, and the place of religion in today's society.

59-60 History of Religions (3-3)

Origins, evolution, and contemporary status in historical context. Rel 59: primitive religion and the religions of the East (Hinduism, Buddhism, Taoism, Confucianism, Shinto). Rel 60: religions of the West and Near East (ancient religions, Judaism, Christianity, Islam).

Slavic Languages and Literatures

Chairman: C.A. Moser, Associate Professor of Russian; GG-10, Telephone: 676-6335

1-2 First-year Russian (3-3)

A year course: credit toward a degree at this University given on completion of Slavic 2. Beginners' course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice. Listening comprehension and oral practice.

***1S-2S Scientific Russian for Beginners (3-3)**

An introduction to the essentials of Russian grammar and reading of modern scientific texts.

3-4 Second-year Russian (3-3)

A year course: credit toward a degree at this University given on completion of Slavic 4. Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics. Prerequisite: Slav 1-2 or two years of high school Russian.

9-10 Russian Conversation and Composition (3-3)

Listening comprehension; oral and written practice. Prerequisite: Slav 4 or permission of instructor.

91-92 Introduction to Russian Literature (3-3)

Survey of Russian literature, in translation, from earliest periods through literary masterpieces of the 19th and early 20th centuries. Lecture, recitation, and discussion—in English.

109-10 Advanced Russian Conversation and Composition (3-3)

Developing proficiency in oral and written expression. Prerequisite: Slav 10 or equivalent.

161-62 Russian Culture (3-3)

Survey of Russian cultural heritage from origins of ancient Russia to present—in English. Lecture, recitation, discussion, and individual reports on assigned topics.

165 Soviet Literature from the Revolution to World War II (3)

(Slav 165 and 166 replace former 165 Soviet Literature)

Basic themes, issues, literary figures of the Soviet 1920's. The fate of literature and writers under increasing state control; Five-year Plan literature. Lecture, discussion, reports—in English.

* This is a special course. It cannot serve as a prerequisite to any advanced course in Slavic Languages and Literatures.

166 Soviet Literature from World War II to the Present (3)

(Slav 165 and 166 replace former 165 Soviet Literature)

Literature in wartime, under Stalinism, and in the "thaws." The new generation of dissident liberals and "underground" literature. Lecture, discussion, reports—in English.

193-94 Introduction to Slavic (non-Russian) Literature—in English (3-3)

An examination of non-Russian Slavic literatures from their beginnings to the present day. Emphasis on themes, ideas, and styles particular to each literature. The impact of national events and culture on each.

Sociology

Chairman: R.G. Brown, Professor of Sociology; Chapin 203, Telephone: 676-6345

Departmental prerequisite: Sociology 1 and either 2 or 61 are prerequisite to all other courses in Sociology.

1-2 Introductory Sociology (3-3)

Soc 1: general principles of sociology; development of culture and personality, impact of groups and institutions on man's social behavior. Survey of fields within sociology. Soc 2: analysis of major social problems confronting the United States; factors producing social problems, their nature and treatment.

124 Medical Sociology (3)

Sociological factors and processes which relate to physical and mental health and disease, analysis of patterned social relationships in the field of health and medicine, the hospital as a social system.

126 Urban Sociology (3)

Place of the city in larger society; growth of the city, problems of urban living, group life, personality, urban housing, city planning, and suburban development.

127 Population Problems (3)

Composition of populations, trends in population growth and population pressure, factors producing population movements, effects of migration, population policies—eugenics and birth control.

129 Race and Minority Groups (3)

Analysis of relationships between dominant and minority groups in society, particularly in the United States; nature and range of problems; analysis of the phenomenon of prejudice.

130 Social Stratification: Class and Status (3)

Nature of class structure, patterns of status, prestige relations, differential class behavior, analysis of comparative social structure and social mobility.

131 Social Institutions (3)

Functional analysis of basic social institutions: family, education, religion, economy, and state in the structure of American society.

133 Sociology of Education (3)

Analysis of educational systems from an institutional and organizational perspective and as agencies of socialization; relationships of education in general to society, including technological, communal, and subcultural components.

134 Marriage and the Family (3)

Courtship as a social process, marriage and marital adjustment, development of the family, parent-child relations, family problems, disorganization, divorce and family reorganization.

135 Juvenile Delinquency (3)

Factors producing delinquency, juvenile detention, the juvenile court, training schools, treatment of offenders.

136 Criminology (3)

(Formerly Soc 51)

Nature and distribution of crime, police and court systems, prisons and reformatories; treatment and prevention of crime.

138 Social Disorganization (3)

Analysis of factors contributing to disruption of social groups, institutions, and communities; study of attempts to establish social controls to prevent, minimize, or mitigate the effects of socially disruptive conditions and events.

139 Society and the Deviant (3)

Analysis of relationships of society, socialization, and deviancy. Social responses to deviancy and criminal offenders; rehabilitative program in community, courts, and schools.

141 Social Research Methods (3)

Introduction to scientific method in the development of social theory and the solution to social problems.

149 Modern Sociological Theory (3)

(Formerly Development of Social Theory)

Systematic study of contemporary schools of sociological theory, both European and American development; evaluation of scientific contributions of each school. Prerequisite: Soc 61.

Spanish*

Chairman: J.F. Burks, Associate Professor of French: A-11, Telephone: 676-6330

1-2 First-year Spanish (3-3)

A year course: credit toward a degree at this University given on completion of Spanish 2. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Spanish prose.

* Administered by the Department of Romance Languages and Literatures.

3-4 Second-year Spanish (3-3)

A year course: credit toward a degree at this University given on completion of Spanish 4. Conversation, grammar, composition, reading of modern Spanish prose, introduction to Hispanic civilization. Prerequisite: Span 1-2 or two years of high school Spanish.

51-52 Survey of Spanish Literature and Civilization (3-3)

Social, artistic, and cultural background of Spanish literature. Lectures, readings, recitations, and informal discussions.

Special Education

Chairman: Perry Botwin, Professor of Special Education; S-30, Telephone: 676-6170

201 Introduction to the Education of Exceptional Children (3)

Survey course to acquaint prospective teachers with the exceptional child and to help them become aware of the various educational modifications necessary to accommodate such children in a school program.

202 Nature and Needs of the Mentally Retarded (3)

Nature and needs of children with varying degrees of retardation. Causation and diagnosis of retardation and its psychological and sociological implications as they apply to the child, his parents, and the family constellation. Admission by permission of instructor.

203 Teaching Mentally Retarded Children (3)

Educational methods and curricula for the mentally retarded at different maturational levels. Organization and planning of instructional activities; selection and preparation of materials. Admission by permission of instructor.

240 Educational Programming for Children with Behavioral Problems (3)
(Formerly Nature and Needs II: the Emotionally Disturbed)

Analysis of educational provisions for children with behavioral problems through study of ecological considerations in the light of contemporary special education theory. Admission by permission of instructor.

242 Clinical Teaching of Emotionally Disturbed Children (3)

Lectures and discussions exploring various psychoeducational techniques of teaching emotionally disturbed children and adolescents, interpersonal interaction between teachers and disturbed children, use of group factors in the teaching-learning process, and selection of appropriate teaching methods and materials. Admission by permission of instructor.

250 Advanced Specialized Teaching Techniques and Materials (3)

Lectures and laboratory practice in specialized techniques and materials for exceptional children. Admission by permission of instructor.

251 Psychosocial Considerations in Special Education (3)

Psychosocial considerations in the education of exceptional children. Admission by permission of instructor.

260 Characteristics of Children with Crippling or Other Health Impairment (3)

(Formerly Nature and Needs III: Crippled or Health-impaired Children)

Characteristics of children whose needs must be met in special classroom settings in home, school, and hospital. Principles of learning as they affect the education and diagnosis of these children. Psychological implications of crippling conditions. Prerequisite: S Ed 201 and permission of instructor.

261 Teaching Crippled, Cerebral-palsied, and Other Health-impaired Children (3)

Programs, methods, and materials for teaching children with orthopaedic, cerebral-palsied, and other health-related disorders. Admission by permission of instructor.

280 Characteristics of Children with Learning Disabilities (3)

Identification of disabilities which may interfere academically, socially, or emotionally with children's normal development. Admission by permission of instructor.

281 Diagnosis of Educational Needs of Children with Learning Disabilities (3)

Study of available instruments for making educational assessments and diagnostic evaluations. Admission by permission of instructor.

282 Teaching Children with Learning Disabilities (3)

Programs, methods, and materials for the educational needs of children with learning disabilities. Admission by permission of instructor.

298 Workshop in Education and Psychology of Emotionally Disturbed Children (3)

Contemporary theory and practice in public school programming for children with behavior problems.

299 Workshop in Diagnostic and Prescriptive Teaching (3)

Theory and practice in diagnostic and prescriptive teaching. Rationale, models, techniques, and problems relevant to implementation are considered.

303 Administration and Supervision of Special Education (3)

Philosophy and nature of special education; program organization, administration, and development. Surveying local-level needs; program evaluation and supervision. Admission by permission of instructor.

304 Recent Research and Trends in Exceptional Children (3)

Emphasis on research methodology and considerations. The unique problems of doing research with exceptional children. Sources of research funds and procedures for obtaining them. Admission by permission of instructor.

306 Guidance and Counseling of Exceptional Children (3)

Educational, mental, social, and vocational guidance of exceptional children. Admission by permission of instructor.

308 Instructional Media and Technology in Education: Past, Present, and Future Relationships and Implications (3)

A review and consideration of technological developments as they affect special education; consideration of operating principles of various kinds of hardware, including printing, audio-visual equipment, television, and computers; status of software for use with hardware. Admission by permission of instructor.

342 Advanced Seminar: Emotional Disturbance (3)

Concepts in the education of emotionally disturbed children. Admission by permission of instructor.

345 Public School Consultation and Program Planning for Emotionally Disturbed Children (3)

Exploration of mental health consultation models in public schools, in-service training programs for educational personnel, and special programming for behaviorally disordered children in the schools. Lectures, discussion, and extensive field work experience. Admission by permission of instructor.

350 Diagnostic and Prescriptive Teaching (3)

Theory and practice in diagnostic and prescriptive teaching. Rationale, models, techniques, and problems relevant to implementation. Admission by permission of instructor.

362 Advanced Seminar: Learning Disabilities and Neurological Impairment (3)

Study in depth of learning disabilities. Admission by permission of instructor.

364 Curriculum Needs and Teaching Techniques for Children with Neurological Impairment and Other Learning Disabilities (3)

Educational needs; materials, techniques, and procedures. Admission by permission of instructor.

370 Intrapersonal Dynamics in Special Education (3)

Small group exploration of intrapersonal factors essential to understanding roles and interpersonal techniques in teaching exceptional children. Admission by permission of instructor.

Speech and Drama

Chairman: G.F. Henigan, Professor of Speech; Auditorium 6, Telephone: 676-6350

1 Effective Speaking (3)

Preparation and delivery of extempore speeches, developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, \$2.

2 Persuasive Speaking (3)

Continuation of Speech and Drama 1, emphasis on the principles and techniques—logical and psychological—of accommodating ideas to an audience and audiences to ideas. Prerequisite: Sp&D 1.

11 Voice and Diction (3)

Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to study of sounds of English, standards of speech. Class instruction in problems of rate, volume, pitch, quality. Recording fee, \$4.

91 Parliamentary Procedure and Group Participation (3)

Principles and procedures for effective speech communication to function successfully at various levels of responsibility in academic, social, professional, civic, or business organizations. Prerequisite: Sp&D 1 or 11, or permission of instructor.

***111 Effective Speech Communication (3)**

The tools and principles of effective speech communication, including practice in the organization, delivery, and evaluation of presentations commonly encountered by professional personnel. Not open to speech majors.

121 Group Discussion and Conference Leadership (3)

Process of thinking and problem solving in committees and small groups; methods of leading discussions and conferences. Prerequisite: 6 hours of speech or permission of instructor.

Statistics

Chairman: Solomon Kullback, Professor of Statistics; Chapin 103, Telephone: 676-6355

Departmental prerequisite: one entrance unit in algebra is prerequisite to courses in Statistics numbered below 100.

†51 **Introduction to Business and Economic Statistics (3)** (Campus Course)
Lecture (3 hours), laboratory (1 hour). Frequency distributions, descriptive measures, probability, sampling, estimation, tests of hypotheses, correlation, time series, index numbers. Laboratory fee, \$9.

†52 **Mathematics of Finance (3)** (Campus Course)
Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation.

101-2 Basic Principles of Statistical Methods (3-3)

Variables and attributes, averages and dispersion, elementary principles of sampling, introduction to the making of statistical decisions.

107 Statistics for Engineers (3)

Probability models, discrete and continuous distributions, sampling, hypothesis testing and estimation, engineering applications. Prerequisite: differential and integral calculus.

* This course can be adapted to the needs of a specific group.

† Statistics 101-2: *Basic Principles of Statistical Methods* (3-3), which is offered off campus, may be substituted.

109-10 Quality Control and Reliability Techniques (3-3)

Statistical methods and probability models for quality control and reliability applications. Prerequisite: Stat 91 or 107.

111 Business and Economic Statistics I (3)

Statistical processes as tools in decision making in areas of economics and business. Prerequisite: Stat 51 or permission of instructor.

112 Business and Economic Statistics II (3)

Case work to illustrate quantitative procedures for solution of economic and business problems. Prerequisite: Stat 111 or equivalent.

Swedish*

Chairman: L.G. Seeger, Associate Professor of German; Rice 408, Telephone: 676-6195

1-2 First-year Swedish (3-3)

A year course: credit toward a degree at this University given on completion of Swedish 2. Essentials of Swedish grammar, conversation, composition, and reading of simple prose.

* Administered by the Department of Germanic Languages and Literatures.

THE UNIVERSITY

HISTORY

GEORGE WASHINGTON UNIVERSITY had its beginning in 1821 as The Columbian College in the District of Columbia. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University. The debt of the University to George Washington, whose name it bears, is an intangible one.

George Washington, as President and as private citizen, had urgently insisted upon the establishment of a National University in the Federal City. There he hoped that, while being instructed in the arts and sciences, students from all parts of the country would acquire the habits of good citizenship, throwing off local prejudices and gaining at first hand a knowledge of the practice, as well as the theory of republican government. To further the materialization of his hopes, Washington left a bequest of fifty shares of The Potomac Company "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." The Congress never extended "a fostering hand." The Potomac Company passed out of existence, and Washington's bequest became worthless.

Fully conscious of Washington's hopes, but motivated primarily by a great missionary urge and the need for a learned clergy, a group of dedicated ministers and laymen sponsored a movement for the establishment of a college in the District of Columbia. Inspired largely by the zeal and energy of the Reverend Luther Rice, they raised funds for the purchase of a site and petitioned Congress for a charter. After much delay and amendment, Congress granted a charter which was approved by President Monroe on February 9, 1821. To safeguard the College's nonsectarian character it provided "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages thereof, for or on account of his sentiments in matters of religion."

During the entire time when the institution was known as Columbian College, its activities were centered on College Hill, a tract of forty-six and a half acres between the present Fourteenth and Fifteenth Streets extending north from Florida Avenue to somewhat beyond Columbia Road. The Medical School

was located downtown. For the better part of the Columbian University period, the buildings of the University were situated along H Street between Thirteenth and Fifteenth Streets. The Medical School group still remains there.

During the last half century the University's present plant has been developed in that section of the old First Ward familiarly known as "Foggy Bottom," between Nineteenth and Twenty-fourth Streets, south of Pennsylvania Avenue. The area is not without its reminders of historic interest to the University. President Monroe, who signed the charter, lived at 2017 Eye Street. The first President of the Board of Trustees, the Reverend Obadiah B. Brown, was for fifty years the pastor of a church at Nineteenth and Eye Streets, and Washington selected Twenty-third and E Streets as the site of the National University he had hoped to see established.

THE COLLEGES, SCHOOLS, AND DIVISIONS

George Washington University includes eleven colleges, schools, and divisions, as follows:

*Columbian College of Arts and Sciences**, through its lower and upper divisions, offers four-year programs in the arts and sciences leading to the degrees of Bachelor of Arts, Bachelor of Science, and (in cooperation with the Department of Pathology and the University Hospital) Bachelor of Science in Medical Technology. The lower division also provides the first two years of the prelegal and premedical programs; the preprofessional work required for admission to the School of Education, the School of Government and Business Administration, and the School of Public and International Affairs; and a terminal Associate in Arts curriculum in Accounting. Columbian College also has academic jurisdiction over off-campus programs leading to the degrees of Bachelor of General Studies, Bachelor of Science in Environmental Health, Bachelor of Science in Geodetic and Cartographic Science, and Bachelor of Science in Oceanography. These off-campus programs are administered by the College of General Studies.

*The Graduate School of Arts and Sciences** offers advanced study and research leading to the degrees of Master of Arts, Master of Fine Arts, Master of Music, Master of Science, and Doctor of Philosophy.

*The School of Medicine** offers work leading to the degree of Doctor of Medicine.

The National Law Center offers courses leading to the degrees of Juris Doctor, Master of Laws, Master of Comparative Law, Master of Comparative Law (American Practice), and Doctor of Juridical Science; and special programs in Continuing Legal Education.

The School of Engineering and Applied Science offers courses leading to the degree of Bachelor of Science in the following areas: Civil Engineering, Electrical Engineering, Measurement Science, and Mechanical Engineering. Graduate programs lead to the degrees of Master of Science, Master of Engineering Administration, and Doctor of Science.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education and Bachelor of Science in Physical Ed-

* Columbian College of Arts and Sciences and the Graduate School of Arts and Sciences cooperate with the School of Medicine in offering the combined degrees of (1) Bachelor of Arts and Doctor of Medicine and (2) Master of Science and Doctor of Medicine.

education; graduate studies leading to the degrees of Master of Arts in Education, Master of Arts in Teaching, Education Specialist, and Doctor of Education.

The School of Government and Business Administration offers undergraduate programs leading to the degree of Bachelor of Business Administration and graduate programs leading to the degrees of Master of Arts in Government, Master of Arts in Health Care Administration, Master of Business Administration, Master of Public Administration, Master of Urban and Regional Planning; the Graduate Certificate in Health Care Administration; the degrees of Doctor of Business Administration and Doctor of Public Administration. The School also has academic jurisdiction over off-campus programs leading to the following degrees: Bachelor of Science in General Studies, Master of Science in Administration, and Master of Science in Business Administration. These off-campus programs are administered by the College of General Studies.

The School of Public and International Affairs offers undergraduate programs leading to the degree of Bachelor of Arts and graduate programs leading to the Certificate of the Institute for Sino-Soviet Studies and the degree of Master of Arts. The School has academic jurisdiction over the off-campus program leading to the degree of Master of Science in International Affairs, which is administered by the College of General Studies.

The College of General Studies supplements the adult education program of the University through campus and off-campus study; conferences, seminars, and special projects; and continuing education and noncredit programs. This College also administers the off-campus programs over which Columbian College of Arts and Sciences, the School of Government and Business Administration, and the School of Public and International Affairs have academic jurisdiction.

The Division of University Students makes available courses for students not candidates for degrees in this University.

The Summer Sessions.

ACADEMIC STATUS

George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The School of Government and Business Administration has maintained full membership in the Middle Atlantic Association of Colleges of Business Administration since 1961. It joined the Council on Graduate Education for Public Administration in 1966. By invitation, the School became a charter academic member of the American Association of Collegiate Schools of Business Assembly in 1968. The programs in Public Accounting designed to prepare students for Certified Public Accountants examinations have been approved by the state boards of New York and of Maryland. The program in Health Care Administration has been accredited by the Association of University Programs in Hospital Administration since 1962.

LOCATION

George Washington University is in downtown Washington, four blocks west of the White House and east of the Potomac River with its extensive parkway.

Within a few blocks are the buildings housing the offices of many of the departments of the Government.

GOVERNMENT

The University is privately endowed and is governed by a self-perpetuating Board of Trustees, with the President of the University as an ex officio member. The members of the Board are named for a period of three years and are divided into three classes. The members of one class are elected at each annual meeting to fill the places of the members whose terms of office expire. Two members of each class are nominated by the Alumni Association.

THE GENERAL ALUMNI ASSOCIATION

The objectives of this Association are to unite the graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and to promote the general welfare of the University.

Eligible members are those who have matriculated in any school of the University and who have left the University in good standing, or any person who is or has been a member of the teaching, research, or administrative staff of the University, or of the Board of Trustees of the University. Active members are those eligible members who are current contributors to or life members of the George Washington University General Alumni Association, the Alumni Association of any school of the University, or contributors to the Annual Support Program.

The Alumni Office is in Bacon Hall, 2000 H Street, N.W., Washington, D.C. 20006.

All alumni are urged to keep the Alumni Office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

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APPENDIX: RECENTLY ESTABLISHED REGULATIONS

THE FOLLOWING UNIVERSITY REGULATIONS are under review and may be subject to change in connection with the establishment of judicial processes. Bulletins and handbooks incorporating any changes will be issued as appropriate.

The following resolution, submitted by the University Senate, was approved by the University's Board of Trustees on October 19, 1968:

Whereas, safety and order are essential preconditions of the learning process, and indeed of the very concept of a university; and

Whereas, The George Washington University is committed to protection of free speech and freedom of assembly, and to safeguarding the right of lawful protest on campus; and is committed equally to maintaining the peace and safety of the campus, in the knowledge that all rights are in jeopardy when violence and civil disorder prevail over law and reason;

Now, therefore, be it resolved by the Senate of The George Washington University: that in the event a demonstration at this University exceeds the bounds of free assembly and lawful advocacy, and demonstrators are engaging in unlawful acts which cause or imminently threaten injury to persons or property, or which obstruct or interfere with normal and necessary University activities, this body affirms the authority of the President, or other University officials designated to act in his absence, to take such reasonable steps, if possible after consultation with the Chairman of the Executive Committee of the University Senate and the President of the Student Body, as are required to restore and preserve order; including, if deemed necessary and appropriate, suspension of students or faculty engaging in such acts, and use of such law enforcement personnel as are needed to effect the removal, arrest, and prosecution of law violators. Any such suspension shall be reviewed by an appropriate tribunal as soon after order is restored as is practicably possible.

The following was approved by the University's Board of Trustees on October 19, 1968:

Any student suspended from The George Washington University on the grounds of exceeding the bounds of free assembly and lawful advocacy shall have his suspension reviewed by the Hearing Committee on Student Affairs of The George Washington University as soon after order is restored as is practicably possible.

The following resolution, submitted by the Student Life Committee, was approved by the University's Board of Trustees on October 19, 1968:

Be it resolved that The George Washington University: affirms its traditional commitment to freedom of expression (a) by continuing to permit business and government organizations which are recruiting employees to conduct their activities at designated places on campus, and (b) by placing no obstacle to students who may wish to protest the presence of such recruiters, provided, however, that such protest shall be orderly and shall not impede or disrupt the recruiter in his activities.

The University affirms its place as a forum for the free exchange of ideas (a) by assuring that guests invited to speak on this campus at duly scheduled meetings shall have the right to appear and to be heard, and (b) by sanctioning the freedom of students to express dissent from the views of the speaker, provided, however, that that expression of dissent be orderly and nonobstructive.

The University distinguishes between orderly protest and resistance-by-obstruction; it accepts the former as a legitimate expression of dissent while rejecting the latter as an abridgement of the freedoms of the individuals who may be its object.

The following was approved by the University's Board of Trustees on October 19, 1968:

The George Washington University is opposed to discrimination based on race, color, or creed. Such discrimination may have appeared in campus organizations in the past. In the future, however, no organization can be recognized or supported by the University unless it provides continued assurance of nondiscrimination in membership practices and in intent, considered adequate by relevant committees and officers of the University.

The following was approved by the University's Board of Trustees on October 19, 1968:

The University cannot condone violations of law, including violation of those laws which proscribe possession, use, sale, or distribution of certain drugs. Members of the academic community should know that administrative action, which may include dismissal from the residence halls, revocation of other privileges, or suspension or dismissal from the University, may be taken in order to protect the interests of the University and the rights of others.

The Board of Trustees reaffirms the responsibility of the President and the Faculty to continue to implement this policy.

The following resolution, submitted by the University Senate, was approved by the University's Board of Trustees on January 16, 1969:

Be it resolved by the Senate of The George Washington University: Any member of the University (including as members of the University all persons having a formal connection with the University)

(a) who engages in conduct that unreasonably obstructs teaching, research, and learning, or

(b) who unreasonably obstructs free access to members or guests of the University or to University buildings, or

(c) who disobeys general regulations of the University, or

(d) who damages University property or injures members or guests of the University,

may be punished for his conduct by dismissal from the University, or by some lesser disciplinary action, through procedures established within the University for the government of its members.

In order to insure due process, any student subject to dismissal or other disciplinary action on the grounds of violating any of the premises of this resolution shall have, at his discretion, the right of review of the action by the University Hearing Committee on Student Affairs.

ANNUAL ISSUES OF THE UNIVERSITY BULLETIN

Requests for the following publications must include zip code and should be addressed as indicated.

COLLEGE OF GENERAL STUDIES, Dean of the College

NATIONAL LAW CENTER, Dean of the Center

SCHOOL OF ENGINEERING AND APPLIED SCIENCE, Dean of the School

UNDERGRADUATE AND GRADUATE CATALOGUE (Arts and Sciences, Education, Government and Business, Public and International Affairs), Office of Admissions

SCHOOL OF MEDICINE, Admissions Office, School of Medicine

SUMMER SESSIONS, Dean of the Summer Sessions

SCHEDULE OF CLASSES: FALL AND SPRING SEMESTERS, Registrar

SCHEDULE OF CLASSES: SUMMER SESSIONS, Dean of the Summer Sessions

INDEX

A

Abbreviations for courses, 61
 Absence, regulations concerning, *see*
 Attendance
 Academic status:
 Of the College of General Studies, 7
 Of the University, 112
 Academic work load, 13-14
 Accounting courses, 61-63
 Accreditation, 7, 112
 Administration, officers of, 114-15
 Admission, 8-9, 23-24, 33-34
 Advanced standing, 23-24, 28, 30, 34
 Alpha Sigma Lambda, 22
 Alumni association, 113

B

Bachelor's degrees, 22-33
 Balance sheet, 17
 Biological Sciences courses, 64
 Board of Trustees, 113-14
 Business Administration courses, 64-69

C

Calendar for 1969-70, 5-6
 Campus study, 13, 33
 Career Services Office, Student and
 Alumni, 22
 Cartography courses, 72-73
 Centers, off-campus, 46-59
 Changes in program of studies, 16-18
 Chemistry courses, 73
 Chinese Language and Literature
 courses, 73
 Colleges, schools, and divisions of the
 University, 111-12
 Committee on Scholarship, 8
 Comprehensive examination, Master's, 35

Annual issues of the *University Bulletin*,
 118
 Anthropology course, 63
 Appendix: recently established
 regulations, 116-17
 Application:
 Fee, 10
 For admission, 8-9
 For graduation, 18
 Art courses, 63
 Attendance, 14, 19
 Auditing, 9
 Automatic Data Processing, M.S. in
 Adm. area of concentration, 36

Business and Public Administration
 courses, 69-72
 Business Financial Management, M.S. in
 Adm. area of concentration, 36
 Business Management, M.S. in Adm.
 area of concentration, 36-37

Concurrent registration, 9
 Conduct, 19, 116-17
 Conferences, seminars, and institutes, 41
 Continuing education for women, 42-43
 Continuous registration, 10, 18
 Correspondence courses, 24
 Counseling, 8
 Course abbreviations, 61
 Course numbers, explanation of, 60
 Course substitution, 35
 Courses of instruction, 60-109
 Credit, 17, 60
 Credit-free programs, 41-42

D

Dean's Council, 8
 Dean's List, 19
 Degree programs, 7, 22-41
 Degrees:
 Bachelor of General Studies, 22-26
 Bachelor of Science in Environmental Health, 22-25, 32-33
 Bachelor of Science in General Studies, 22-25, 26-27
 Bachelor of Science in Geodetic and Cartographic Science, 22-25, 27-30
 Bachelor of Science in Oceanography, 22-25, 30-31

Degrees (cont'd):
 Master of Science in Administration, 33-40
 Master of Science in Business Administration, 41
 Master of Science in International Affairs, 41
 Dishonesty, regulations concerning, 20
 Dismissal of students, 21, 116-17
 Distinction, degrees earned with, 19-20
 Dropping courses, 16-17

E

Economics courses, 74
 Education courses, 74-79
 Education directors of area instruction, *see* Off-campus Centers
 English courses, 80
 Entrance requirements, 8-9, 23-24, 33-34
 Epidemiology and Environmental Health courses, 81-82

Examinations:
 Admission Test for Graduate Study in Business, 34
 For waiving curriculum requirements, 14
 Master's comprehensive, 35
 Validating, 11, 24

F

Fees and financial regulations, 9-13

French courses, 83

G

General Alumni Association, 113
 Geodesy courses, 83-84
 Geography and Regional Science courses, 84-85
 Geology courses, 85
 Geophysics courses, 86
 Germanic Languages and Literatures courses, 86

Government of the University, 113
 Governmental Administration, M.S. in Adm. area of concentration, 37
 Grades, 14-15
 Graduation:
 Application for, 18
 Fee, 10
 Requirements, 18-20

H

Health Care Administration courses, 86-87
 History courses, 87-88
 History of the University, 110-11

Honor society, 22
 Honors, 19-20
 Humanities courses, 88-89

I

Index of Off-campus Centers, 44-45
 Industrial Personnel Management, M.S. in Adm. area of concentration, 37
 Institutes, 41

International Affairs courses, 89
 International Commerce, M.S. in Adm. area of concentration, 38
 Italian courses, 89-90

J

Journalism course, 90

L

- Latin American Civilization, special program, 90
- Leave of absence, 18, 19
- Library, 20
- Location of the University, 112-13

M

- Management Engineering, M.S. in Adm. area of concentration, 38
- Management Science—Operations Research, M.S. in Adm. area of concentration, 38-39
- Master's comprehensive examination, 35
- Master's degrees, 33-41
- Mathematics courses, 91-92
- Military cooperative programs, 41
- Military Leave, 18
- Military transfer of students, 12, 18, 19
- Music courses, 93

N

- Noncredit programs, 41-42

O

- Oceanography courses, 93-94
- Off-campus Centers, 46-59
- Index of, 44-45

P

- Payment of fees:
 - Campus courses, 12
 - Off-campus courses, 11-12
- Philosophy course, 94
- Physical education courses, 94-95
- Physics courses, 95-96
- Placement, student, 22
- Political Science courses, 96-98
- Probation, 15-16
- Procurement and Contracting, M.S. in Adm. area of concentration, 39
- Psychology courses, 98-99
- Public Administration courses, 99-101
- Public Financial Management and Budgeting, M.S. in Adm. area of concentration, 39
- Public Personnel Management, M.S. in Adm. area of concentration, 40

Q

- Quality-point index, 15, 23, 25, 28, 30
- Major, Q.P.I., 25, 28, 30

R

- Readmission, 16
- Refund of fees:
 - Campus courses, 12-13
 - Off-campus courses, 12
- Registration, 9
- Regulations, 13-21, 116-17
- Financial, 11-13
- Release of student information, policy on, 21
- Religion courses, 101-2
- Residence requirements, 19, 24-25, 34
- Rules of the University, right to change, 21
- Russian courses, 102-3

S

- Scholarship, committee on, 8
- Scholarship requirements, 14-16, 19, 25, 28, 30, 34
- Selective service information, policy on, 21
- Semester hours, explanation of, 60
- Seminars, 41
- Service schools, credit through, 24
- Slavic Languages and Literatures courses, 102-3
- Sociology courses, 103-4
- Spanish courses, 104-5
- Special Education courses, 105-7
- Special honors, 20
- Speech and Drama courses, 107-8
- Statistics courses, 108-9
- Student information, release of, 21
- Student services, 22
- Suspension, 16, 116-17
 - Financial, 12
- Swedish course, 109
- Systems Management, M.S. in Adm. area of concentration, 40

T

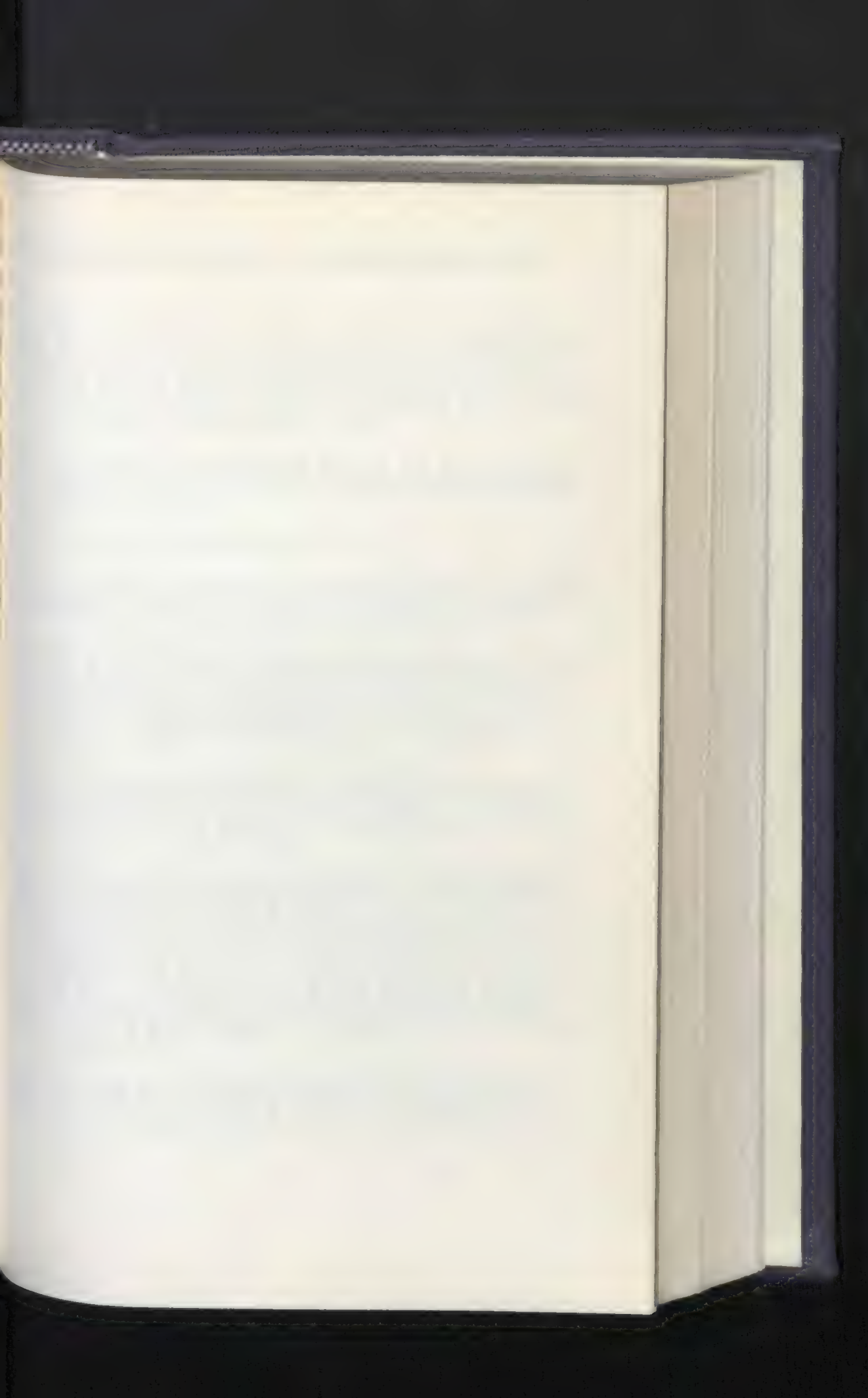
- Thesis, 10, 19, 34-35
- Transcripts of record, 11, 16, 17-18
- Transfer:
 - From other institutions, 23-24, 25, 34
 - Within the University, 17
- Trustees, Board of, 113-14
- Tuition, 10, 11
 - Projected increases, 1970-73, 11

V

- Validating examinations, 11, 24
- Veterans education, 22

W

- Waiver examinations, 14
- Warnings, 15
- Withdrawal, 10, 12-13, 16-17
- Women, continuing education for, 42-43



COLLEGES AND SCHOOLS—DEGREE PROGRAMS

COLUMBIAN COLLEGE OF ARTS AND SCIENCES: Associate in Arts (A.A.), Bachelor of Arts (B.A.), Bachelor of General Studies (B.Gen.Std.), Bachelor of Science (B.S.), Bachelor of Science in Environmental Health (B.S. in Env.Health), Bachelor of Science in Geodetic and Cartographic Science (B.S. in Geod. and Cart.Sc.), Bachelor of Science in Medical Technology (B.S. in Med.Tech.), and Bachelor of Science in Oceanography (B.S. in Ocea.)

GRADUATE SCHOOL OF ARTS AND SCIENCES: Master of Arts (M.A.), Master of Fine Arts (M.F.A.), Master of Music (Mus.M), Master of Science (M.S.), and Doctor of Philosophy (Ph.D.)

SCHOOL OF MEDICINE: Doctor of Medicine (M.D.)

NATIONAL LAW CENTER: Juris Doctor (J.D.), Master of Laws (LL.M.). Master of Comparative Law (M.Comp.L.), Master of Comparative Law (American Practice) (M.Comp.L.(Am.Prac.)), and Doctor of Juridical Science (S.J.D.)

SCHOOL OF ENGINEERING AND APPLIED SCIENCE: Bachelor of Science (Civil Engineering) (B.S. (C.E.)), Bachelor of Science (Electrical Engineering) (B.S. (E.E.)), Bachelor of Science (Measurement Science) (B.S. (Meas.S.)), Bachelor of Science (Mechanical Engineering) (B.S. (M.E.)), Master of Science (M.S.), Master of Engineering Administration (M.E.A.), and Doctor of Science (D.Sc.)

SCHOOL OF EDUCATION: Bachelor of Arts in Education (B.A. in Ed.), Bachelor of Science in Physical Education (B.S. in P.E.), Master of Arts in Teaching (M.A.T.), Master of Arts in Education (M.A. in Ed.), Education Specialist (Ed.S.), and Doctor of Education (Ed.D.)

SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION: Bachelor of Business Administration (B.B.A.), Bachelor of Science in General Studies (B.S. in Gen.Std.), Master of Arts in Government (M.A. in Govt.), Master of Arts in Health Care Administration (M.A. in H.C.A.), Master of Business Administration (M.B.A.), Master of Public Administration (M.P.A.), Master of Science in Administration (M.S. in Adm.), Master of Science in Business Administration (M.S. in B.A.), Master of Urban and Regional Planning (M. of Urb. and Reg.Plan.), Graduate Certificate in Health Care Administration (Grad.Cert. in H.C.A.), Doctor of Business Administration (D.B.A.), and Doctor of Public Administration (D.P.A.)

SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS: Bachelor of Arts (B.A.), Certificate of the Institute for Sino-Soviet Studies (Cert. of I.S.S.S.), Master of Arts (M.A.), and Master of Science in International Affairs (M.S. in I.A.)

THE GEORGE WASHINGTON UNIVERSITY

COLUMBIAN COLLEGE OF ARTS AND SCIENCES, 1821

THE GRADUATE SCHOOL OF AGRICULTURE AND MECHANICAL ARTS, 1849

THE SCHOOL OF MEDICINE, 1855

THE NATIONAL LAW CENTER, 1860

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE, 1884

THE SCHOOL OF EDUCATION, 1907

THE SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION, 1928

THE SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS, 1928

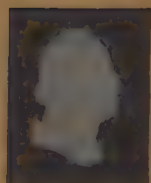
THE SCHOOL OF INTERNATIONAL STUDIES, 1960

THE DIVISION OF UNIVERSITY STUDIES, 1930

THE SUMMER SESSIONS, 1905

THE UNIVERSITY HOSPITAL, 1898

THE GEORGE WASHINGTON UNIVERSITY BULLETIN



SUMMER
SESSION
CATALOGUE

1969

CORRESPONDENCE DIRECTORY

Detailed information may be obtained by addressing inquiries as indicated below. For any information not included here, please write to the Office of Admissions. Mailing address for all University offices unless otherwise indicated is The George Washington University, Washington, D.C. 20006.

Information concerning courses of instruction, programs, and faculties of the several colleges and schools will be found in separate issues of the University Bulletin, which are listed on page 97. Zip code is essential for mailing catalogues.

Admission

Graduate

Arts and Sciences.....Dean of The Graduate School of Arts and Sciences
Education.....Dean of The School of Education
Engineering and Applied Science.....Dean of The School of Engineering
and Applied Science

Accounting, Business Administration, Business and Economic Statistics, Health Care Administration, International Business, Personnel Administration, Public Administration, Urban and Regional Planning
Dean of The School of Government and Business Administration
International Affairs and Public Affairs.....Dean of

The School of Public and International Affairs

Law.....Dean of The National Law Center

School of Medicine.....1331 H Street, Washington, D.C. 20005

Undergraduate.....Office of Admissions

Alumni Association.....Alumni Office

Medical Alumni Association.....1331 H Street, Washington, D.C. 20005

Financial AidStudent Financial Aid Office

Foreign Students.....Adviser to International Students

Gifts and Bequests.....Resources Program

Housing

Men.....Dean of Men

Women.....Dean of Women

Off-campus and Noncredit Courses.....Dean of The College of General Studies

Student Employment.....Student and Alumni Career Services Office

Summer Sessions.....Dean of The Summer Sessions

Transcripts of Records.....Registrar

Veterans Education.....Registrar

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THE SUMMER SESSIONS 1969

WASHINGTON, D.C. 20006

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CONTENTS

| Page | |
|------|--|
| 4 | A Summer Semester in the Nation's Capital |
| 5 | Calendar for the 1969 Summer Sessions |
| 7 | The University |
| 7 | History and Organization |
| 8 | Academic Status |
| 9 | Educational Facilities |
| 9 | Consortium of Universities of the Washington Metropolitan Area, Inc. |
| 10 | The Board of Trustees |
| 11 | Officers of Administration |
| 13 | The Summer Sessions |
| 13 | Admission |
| 15 | Registration |
| 16 | Fees and Financial Regulations |
| 18 | University Regulations |
| 19 | Student Services and Activities |
| 19 | Health Services |
| 20 | Reading Center |
| 21 | Psychological Clinic |
| 21 | Speech and Hearing Clinic |
| 21 | Veterans Education |
| 22 | Residence Hall |
| 22 | Student Union |
| 23 | Student and Alumni Career Services Office |
| 23 | Social and Recreational Program |
| 24 | The Colleges, Schools, and Divisions |
| 24 | Columbian College of Arts and Sciences |
| 26 | The Graduate School of Arts and Sciences |
| 27 | The National Law Center |
| 28 | The School of Engineering and Applied Science |
| 30 | The School of Education |
| 31 | The School of Government and Business Administration |
| 32 | The School of Public and International Affairs |
| 32 | The College of General Studies |
| 33 | The Division of University Students |
| 34 | Special Programs and Workshops |
| 40 | Courses of Instruction |
| 92 | Hourly Schedule of Classes |
| 97 | Annual Issues of the University Bulletin |
| 98 | Index |

A SUMMER SEMESTER IN THE NATION'S CAPITAL

THE GEORGE WASHINGTON UNIVERSITY announces a two-term summer program which makes it possible for students to earn 14 semester hours of credit during the summer months. The Library, classrooms, and residence hall are air-conditioned. For courses offered at specific times, refer to the hourly schedule on pages at the back of this catalogue. For term dates, see the calendar on pages 5 and 6.

CALENDAR FOR THE 1969 SUMMER SESSIONS

Application for Graduation—An "Application for Graduation" form *must* be filed and the appropriate fee paid at the time of registration for the summer session of the senior or final year. Students completing degree requirements during the Summer Sessions will be awarded diplomas (no formal convocation) September 30, 1969, provided they have completed all degree requirements and have applied for graduation as a part of registration for the Summer Sessions.

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

GRADUATE SCHOOL OF ARTS AND SCIENCES

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

**SCHOOL OF GOVERNMENT
AND BUSINESS ADMINISTRATION**

SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

DIVISION OF UNIVERSITY STUDENTS

First Session

- | | |
|------------------|---|
| <i>June 16</i> | Registration for first 5-week session and 8-week courses (10 am–8 pm) <i>Monday</i> |
| <i>June 17</i> | First 5-week session classes and 8-week courses begin <i>Tuesday</i> |
| <i>July 4</i> | Independence Day (holiday) <i>Friday</i> |
| <i>July 22</i> | First 5-week session classes end <i>Tuesday</i> |
| <i>July 23</i> | First 5-week session examination day <i>Wednesday</i> |
| <i>August 27</i> | Master's theses completed in summer due in appropriate Dean's Office <i>Wednesday</i> |

Second Session

- July 24* Registration for second 5-week session (10 am–7 pm) *Thursday*
July 25 Second 5-week session classes begin *Friday*
August 7 Eight-week courses end *Thursday*
August 8 Eight-week course examinations *Friday*
August 27 Master's theses completed in summer due in appropriate Dean's Office *Wednesday*
August 28 Second 5-week session classes end *Thursday*
August 29 Second 5-week session examination day *Friday*

NATIONAL LAW CENTER

- June 9* Registration for all sessions (11 am–7 pm) *Monday*
June 10 First session and 13-week session begin *Tuesday*
July 4 Independence Day (holiday) *Friday*
July 18 First-session classes end *Friday*
**July 21–23* First-session examination period *Monday–Wednesday*
July 24 Registration for students attending 2d session only (11 am–7 pm) *Thursday*
July 25 Second-session classes begin *Friday*
September 1 Labor Day (holiday) *Monday*
September 3 Last day of classes *Wednesday*
September 4–6 Second session and 13-week session examination period *Thursday–Saturday*

SCHOOL OF EDUCATION

- June 16* First 3-week workshop session registration (10 am–8 pm) *Monday*
June 17 First 3-week workshop session classes begin *Tuesday*
July 3 First 3-week workshop session classes end *Thursday*
July 4 Independence Day (holiday) *Friday*
July 7 Second 3-week workshop session registration (9 am–6 pm); classes begin *Monday*
July 7 Six-week session registration (9 am–6 pm); classes begin *Monday*
July 7 Ed.D., Ed.S., and M.A. in Ed. July comprehensive examination applications due *Monday*
July 19 National Teacher Examinations *Saturday*
July 25 Second 3-week workshop session classes end *Friday*
July 26 Ed.D., Ed.S., and M.A. in Ed. comprehensive examinations *Saturday*
July 28 Third 3-week workshop session registration (9 am–5 pm); classes begin *Monday*
August 15 Six-week session and third 3-week workshop session classes end *Friday*

FALL SEMESTER 1969

- September 18–20* Registration—*Thursday–Saturday*

* Classes scheduled Wednesday evenings for the 13-week session will meet on Wednesday, July 23.

THE UNIVERSITY

HISTORY AND ORGANIZATION

THE GEORGE WASHINGTON UNIVERSITY had its beginning in 1821 as The Columbian College in the District of Columbia. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University. The debt of the University to George Washington, whose name it bears, is an intangible one.

George Washington, as President and as private citizen, had urgently insisted upon the establishment of a National University in the Federal City. There he hoped that, while being instructed in the arts and sciences, students from all parts of the country would acquire the habits of good citizenship, throwing off local prejudices and gaining at first hand a knowledge of the practice, as well as the theory, of republican government. To further the materialization of his hopes, Washington left a bequest of fifty shares of The Potomac Company "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." The Congress never extended "a fostering hand." The Potomac Company passed out of existence, and Washington's bequest became worthless.

Fully conscious of Washington's hopes, but motivated primarily by a great missionary urge and the need for a learned clergy, a group of dedicated ministers and laymen sponsored a movement for the establishment of a college in the District of Columbia. Inspired largely by the zeal and energy of the Reverend Luther Rice, they raised funds for the purchase of a site and petitioned Congress for a charter. After much delay and amendment, Congress granted a charter which was approved by President Monroe on February 9, 1821. To safeguard the College's nonsectarian character it provided "that persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages thereof, for or on account of his sentiments in matters of religion."

During the entire time when the institution was known as Columbian College, its activities were centered on College Hill, a tract of forty-six and a half acres between the present Fourteenth and Fifteenth Streets extending north

from Florida Avenue to somewhat beyond Columbia Road. The Medical School was located downtown. For the better part of the Columbian University period, the buildings of the University were situated along H Street between Thirteenth and Fifteenth Streets. The Medical School group still remains here.

During the last half century the University's present plant has been developed in that section of the old First Ward familiarly known as "Foggy Bottom," between Nineteenth and Twenty-fourth Streets, south of Pennsylvania Avenue. Within a few squares are the White House, the Department of the Interior, the State Department, the World Bank, and many other governmental offices and international agencies. The area is not without its reminders of historic interest to the University. President Monroe, who signed the Charter, lived at 2017 Eye Street. The first President of the Board of Trustees, the Reverend Obadiah B. Brown, was for fifty years the pastor of a church at Nineteenth and Eye Streets, and Washington selected Twenty-third and E Streets as the site of the National University he hoped to see established.

The University as it is now organized consists of Columbian College of Arts and Sciences (undergraduate); the Graduate School of Arts and Sciences; the professional schools, which include the National Law Center and the schools of Medicine, Engineering and Applied Science, Education, Government and Business Administration, and Public and International Affairs; the College of General Studies; the Division of University Students; and the Summer Sessions.

The George Washington University is privately endowed and is governed by a self-perpetuating Board of Trustees of which the president is an ex officio member.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The National Law Center is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association. The School of Medicine is a member of the Association of American Medical Colleges and is one of the medical colleges which have been continuously approved by the American Medical Association. Curricula of the School of Engineering and Applied Science in Civil, Electrical, and Mechanical Engineering are accredited by the Engineer's Council for Professional Development. The School of Education is a charter member of the American Association of Colleges for Teacher Education and is accredited by the National Council for Accreditation of Teacher Education. The Department of Chemistry is on the approved list of the American Chemical Society. The School of Government and Business Administration maintains full membership in the Middle Atlantic Association of Colleges of Business Administration, and by invitation, in 1968, the School became a charter academic member of the American Association of Collegiate Schools of Business Assembly. The Programs in Public Accounting designed to prepare students for Certified Public Accountants examinations have been approved by the state boards of New York and Maryland. The program in Hospital Administration has been accredited by the Association of University Programs in Hospital Administration since 1962.

EDUCATIONAL FACILITIES

The University Library.—The University Library contains approximately 476,902 volumes and, with the exception of the law and medical collections, is housed in the Library Building.

Regulations governing the use of the Library, the circulation of books, and the use of reserve books and periodicals are available at the service desks of the Library.

Other Library Facilities in Washington.—The student has access also to the Library of Congress, the Public Library of the District of Columbia and its branches, the Library of the Pan American Union, the Library of the Bureau of Railway Economics, the Library of the United States Department of Agriculture, the Library of the United States Office of Education, the National Library of Medicine, the Library of the Smithsonian Institution, and many other great special collections of the government departments.

Research Facilities of Washington.—The arrangement of the summer schedule of classes permits the full-time student to avail himself of the opportunity to study, at first hand, the working of the Federal Government and so to form a background for intelligent and useful citizenship.

In the departmental libraries of the Federal Government are a multitude of reports made by eminent specialists in all fields of science on the results of study and research in the bureaus, experimental stations, laboratories, museums, and observatories of the Nation.

In addition to the governmental collections the student has available the research facilities of such scientific and educational groups, whose headquarters are situated in Washington, as the Carnegie Institution, the American Council on Education, the National Academy of Sciences, the National Research Council, the National Education Association, and the National Geographic Society.

CONSORTIUM OF UNIVERSITIES OF THE WASHINGTON METROPOLITAN AREA, INC.

Five universities in Washington, D.C.—American University, Catholic University of America, *George Washington University*, Georgetown University, and Howard University—have formed a Consortium through which they are coordinating the use of their respective facilities. As the arrangement develops, juniors, seniors, and graduate students in approved programs leading to degrees in any one of the universities will increasingly have the opportunity to select from the combined offerings of all five universities the particular courses which best meet their needs.

Participation is limited to campus degree candidates. The following, however, are excluded: freshman and sophomore students, and students in Canon Law, Dentistry, Medicine, Nursing, and Theology. Law students are also excluded from participation, except for candidates for the degree of Master of Laws at *George Washington University* and *Georgetown University*.

Special courses, such as private instruction (as in music or art) or tutorial study and courses in preparation for passing the language requirement, are excluded from the Consortium program. Also excluded are courses offered in Reserve Officer Training Corps programs. *A student may not take courses at another university that are available at his own.*

The student registers and pays at his own university for all Consortium courses. There are no refunds for Consortium courses in the summer.

See page 16 for information concerning registration for Consortium courses.

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 George Martin Koehl, M.A., *Associate Dean of Columbian College of Arts and Sciences*
 James Joseph Feffer, B.A., M.D., *Associate Dean of the Medical Center, for Clinical Affairs; Chief of Staff, University Hospital and Clinics*
 Angus MacIvor Griffin, Ph.D., *Associate Dean of the Medical Center, for Administration and Planning*

12 SUMMER SESSIONS

Frank Nelson Miller, Jr., B.S., M.D., *Associate Dean of the Medical Center, for Student and Curricular Affairs*

William Wallace Kirkpatrick, B.A., LL.B., *Associate Dean of the National Law Center*

Ralph Clarke Nash, Jr., B.A., J.D., *Associate Dean of the National Law Center, for Graduate Studies, Research, and Projects*

Edward Andrew Potts, B.A., LL.B., *Associate Dean of the National Law Center*

Victor Frederick Ludewig, B.S., *Administrator of the University Hospital and Clinics*

Joseph Louis Métivier, Jr., M.A., *Assistant Dean of Columbian College of Arts and Sciences*

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Robert Edward Baker, M.A., Ed.D., *Assistant Dean of the School of Education*

Blake Smith Root, Ed.D., *Assistant Dean of the School of Education*

Edwin Joseph Baughman Lewis, B.A., M.B.A., *Assistant Dean for Special Projects in the School of Government and Business Administration*

Paul Vernon Bissell, Ph.D., *Assistant Dean of the College of General Studies*

THE SUMMER SESSIONS

THE PROGRAMS OF THE SUMMER SESSIONS have been planned to meet the needs of full- and part-time students.

During the summer of 1969, Columbian College of Arts and Sciences, the Graduate School of Arts and Sciences, the School of Government and Business Administration, the School of Public and International Affairs, and the Division of University Students offer courses in two 5-week sessions, with some graduate seminars and courses extending over an 8-week period. The School of Engineering and Applied Science offers courses in an 8-week period. The National Law Center offers courses in three sessions, and the School of Education offers courses in a 6-week session and three 3-week workshop sessions.

The time at which each course is offered (session and hours) is stated at the end of the course description. For the convenience of the student an hourly schedule of classes, arranged by session, appears on pages 92-97.

Admission

APPLICATION FOR ADMISSION OR READMISSION

THE APPLICATION FOR ADMISSION to degree candidacy should be accompanied by a \$25 application fee. There is no application fee for the student who is applying for nondegree status in the Division of University Students.

NONDEGREE STATUS

Application for nondegree status in the Division of University Students should be received, with any required credentials, by the Friday before the registration date of the session for which admission is sought (see Calendar, pages 5 and 6).

DEGREE CANDIDACY

Students from secondary schools wishing to begin college as degree candidates, in either the first or second term of the summer session, must submit application and all required credentials prior to March 1.

14 SUMMER SESSIONS

Undergraduate transfer students from other institutions, applicants for graduate programs, and readmission applicants must submit application and required credentials prior to May 1 for the first summer session and June 1 for the second summer session.

For admission to the National Law Center, see pages 27-28.

Records presented become the property of the University and *cannot* be returned.

APPLICATION FORMS

The tearout postcard form inside the back cover of this catalogue may be used to request the Dean of the Summer Sessions to furnish the appropriate form for admission or readmission to the University for nondegree status or for a degree program. Students who attended the University in the spring semester of 1969 do not need to reapply to attend the Summer Sessions.

THE STUDENT NOT SEEKING A DEGREE

The student not seeking a degree from this University should complete application for admission to the Division of University Students. (See paragraph above.) This nondegree-granting division makes the work of the University available to the following five types of applicants:

1. The student registered for a degree at another institution is admitted to the extent that facilities permit. No transcript of record is required unless the student has been subject to academic or disciplinary action.*
2. The student over 21 years of age who is not working for a degree in this or another institution may be admitted to take courses for which he has adequate preparation, as determined by the department concerned. A transcript of record is not usually required.*
3. Secondary school applicants under 21 years of age who have not attended a college or higher institution may be admitted if they meet the entrance requirements of Columbian College of Arts and Sciences (see pages 24-25).
4. Under special conditions, secondary school applicants under 21 years of age who have been accepted by a regionally accredited university or college for the fall semester of 1969 may be admitted for the *summer session only* without filing a transcript if they submit a photostatic copy of their letter of unconditional acceptance.
5. Secondary school students applying for admission to the Secondary School Honors Program see pages 38-39 for the description of the program and the special requirements.

THE STUDENT SEEKING A DEGREE

An applicant from a secondary school must:

1. Send to his high school principal the high school record form provided by the University, with the request that the completed form be mailed to the *Office of Admissions*.

* For admission to the Division of University Students the student must be in good standing and eligible to continue in the institution last attended during the past calendar year. No student is eligible for admission if he has been suspended within the past calendar year.

2. Request a report of College Entrance Examination Board test scores be sent to the Office of Admissions directly from the Educational Testing Service, Princeton, N.J., or Berkeley, Calif. Every applicant is required to submit scores on the Scholastic Aptitude Test and the English Composition Achievement Test. In addition, an Engineering applicant must take the Mathematics Test (Level I or II).

An applicant who has attended one or more institutions of higher learning must request each registrar to mail to the Office of Admissions a transcript of his record, even though credits were not earned. An honorable dismissal is required from the institution last attended.

The report of the Graduate Record Examination, the Miller Analogies Test, or the Admission Test for Graduate Study in Business, where applicable, should accompany application to graduate degree candidacy.

Registration

A STUDENT MAY NOT REGISTER FOR CLASSES until admission to the University has been approved by the appropriate office.

A student previously registered in this University who was not registered for campus courses during the spring semester preceding this registration must apply for and receive a letter of readmission from the Office of Admissions (undergraduate and nondegree) or appropriate Dean's Office (graduate), before he is eligible for registration.

Registration days and hours are stated in the calendar at the front of this catalogue. All students except those in the National Law Center should report first to the first floor of the University Library, 2023 G Street, N.W., where they will be given materials and detailed information concerning registration procedures. Degree candidates in Law secure their registration packets and instructions at the Office of the Dean of the National Law Center in Stockton Hall.

Registration packets for all students (except those in the National Law Center) registering on June 16 and July 24 will be distributed from the University Library, 2023 G Street, N.W. On all other registration dates (Law excluded), packets will be distributed from the Office of the Registrar, Rice Hall, 2121 Eye Street, N.W.

Students planning to take courses in the first session and also in other sessions later in the summer may register at the first registration for *all* summer courses. Students who wish to register for the second five-week session, the second session in Law, or the second three-week, the six-week, or the third three-week session in Education may register on the stated registration dates for those sessions or on any earlier summer registration date (see Summer Sessions Calendar, pages 5-6). Tuition for all courses is due and payable in full at the time of registration.

Students expecting to complete requirements for degrees during the Summer Sessions must apply for graduation as a part of registration for the Summer Sessions and pay the appropriate fee.

In special instances, with the permission of the instructor, a person who has been admitted to the University may be registered as an auditor in a class without being required to take active part in the exercises or to pass examinations. No academic credit will be allowed for such attendance. A student who takes a course as an auditor may not take the same course later for credit.

Summer Law students planning to take the New York Bar examination must register for both sessions, complete both, and carry a program of at least ten class periods a week (if day students) and at least eight class periods a week (if evening students).

REGISTRATION BY GW STUDENTS FOR CONSORTIUM COURSES

Students interested in taking courses at any of the four other universities in the Consortium of Universities of the Washington Metropolitan Area, Inc. (see pages 9-10), should consult the program announcements of the other universities. In order to participate in the Consortium program, the graduate student must obtain the approval of his adviser; the undergraduate student must obtain the approval of his dean.

Registration forms and instructions are available from the Registrar. Specific inquiries should be addressed to the Registrar.

CHANGES IN PROGRAM OF STUDY

Changes in programs of study may be made only with the permission of the adviser or major professor and the dean or director of the college, school, or division concerned.

Students should consult the deans' offices concerning final dates on which changes in schedule may be made.

Fees and Financial Regulations

THE FOLLOWING FEES have been adopted for the summer of 1969:

Tuition Fees

For each semester hour* (except for work taken by candidates for the degree of Doctor of Juridical Science and all other Doctoral candidates in residence in the University prior to the 1967 Summer Sessions).....

Doctor of Juridical Science, including the final examination.....

\$64.00
1,800.00

Additional Course Fees

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are due with the tuition fee for the course. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee, the individual student will be required to pay such additional charges as are determined by the department concerned.

*Candidates for doctoral degrees (except for the degree of Doctor of Juridical Science) in residence in the University prior to the 1967 Summer Sessions may complete their programs under the schedule for payment of tuition fees in effect prior to July 1, 1967. For tuition fee for the degree of Doctor of Juridical Science, see above.

Graduation Fees

| | |
|---|-------|
| Associate in Arts..... | 10.00 |
| Bachelor's, Master's, Education Specialist, and Doctor's degrees..... | 25.00 |
| Certificate of the Institute for Sino-Soviet Studies, Graduate Certificate in Health Care Administration..... | 25.00 |
| Fee for Binding Master's Thesis..... | 10.00 |
| Fee for Microfilm Service and Printing Abstract of Doctoral Dissertation..... | 55.00 |

Special Fees

| | |
|--|------------|
| Application fee (degree candidate) nonrefundable..... | 25.00 |
| Application fee, Unclassified Students in the National Law Center, non-refundable..... | 5.00 |
| Admission tests (when required)..... | 6.00-12.00 |
| Late-registration fee, for failure to register within the designated period..... | 15.00 |
| Reinstatement fee, for reinstatement after financial suspension for nonpayment of fees..... | 15.00 |
| Returned check fee, charged a student whose check is returned because of insufficient funds or improper drafting..... | 15.00 |
| For each examination to qualify for advanced standing and for each special examination..... | 5.00 |
| English test for foreign students (when required)..... | 5.00 |
| Laboratory check-out fee, for failure to check out of chemistry laboratory by the date deadline set by the instructor..... | 3.00 |
| National Teacher Examinations fee, for Bachelor of Arts in Education degree candidates..... | 9.00-13.00 |
| Transcript fee, for each transcript of record..... | 1.00 |
| Withdrawal fee, charged in special cases..... | 5.00 |

Registration in the University entitles each student to the following University privileges: (1) the services of the Student Career Services Office; (2) the use of the University Library; (3) medical attention and hospital services described on pages 19-20. These privileges terminate when the student withdraws or is dismissed from the University.

PAYMENT OF FEES

No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each session are due in advance at the time of registration.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Registrations are for the session, and no refunds or rebates are allowed; this regulation also applies to courses taken through the Consortium of Universities of the Washington Metropolitan Area, Inc. In no case will tuition be refunded because of absence from classes.

Payments apply only to the session for which registration charges are incurred, and in no case will these payments be credited to another session or term.

Students in chemistry who fail to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a \$3 check-out fee. A student who drops a course before the end of the session must check out of the laboratory at the next regular laboratory period.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

University Regulations

STUDENTS IN THE SUMMER SESSIONS are subject to the University regulations governing students enrolled during the academic year. Degree candidates are referred to the catalogues of the schools in which they are registered. Non-degree students should consult the *Undergraduate and Graduate Catalogue*.

Academic Credit.—The Summer Sessions are an integral part of the University. Academic credit for completed work will be given toward the appropriate degrees in the various colleges and schools of the University in accordance with their separate regulations and requirements.

Residence.—Summer Sessions work may be counted in residence but the candidate for a degree must satisfy the residence requirements of the school or college concerned.

Academic Work Load.—No full-time student may take more than 7 semester hours of work during each 5-week session. No student employed more than 20 hours a week may take more than 4 semester hours of work during each 5-week session.

In the School of Education, 3 semester hours constitutes a full-time program for full-time students in any one of the 3-week workshop sessions, and 6 semester hours represents full-time work in the 6-week session.

In the National Law Center the maximum amount of work that may be taken in each session by a full-time student is 6 semester hours; by an employed student, 4 semester hours.

In the School of Engineering and Applied Science the maximum amount of work that may be taken in a session by a full-time student is 6 semester hours.

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" office is maintained in the Campus Police Office.

UNIVERSITY POLICY ON THE RELEASE OF STUDENT INFORMATION

In general, the policy of the University is one of attempting to keep the student's record confidential and out of the hands of those who would use it for

other than legitimate reasons. At the same time, the policy must be flexible enough not to hinder the student, the University, or the community in their legitimate endeavors.

No information concerning a student will be released, except as noted below, unless required by court order or subpoena, or requested in writing by the student:

1. Information which is of public record, such as whether or not the student is currently enrolled; dates of attendance; whether or not he received a degree; current address and telephone number; the school or college in which he is enrolled.

2. The issuance of formal transcripts of record to recognized institutions of higher learning; the certification of academic achievement to the various recognized professional associations (law, medicine, engineering, education, etc.); and the inspection of records, under appropriate supervision, by properly validated representatives of government investigative agencies.

Student Services and Activities

HEALTH SERVICES

THE HEALTH SERVICES STAFF assists students with their medical needs by advice and treatment, by proper referral when necessary, and by cooperation with other physicians. For medical emergencies and health consultations there is, on the campus, a Student Health Clinic open from 9 a.m. to 9 p.m. Monday through Friday during the Summer Sessions, with physician in attendance. For night and week-end emergencies, students may go to the emergency room of the University Hospital for treatment. The basic fee for this visit will be paid by the Health Services, and all other charges will be the responsibility of the student. This arrangement is for emergency care only.

Medical privileges include: (1) physical examination* of all applicants for courses in Physical Education who lack reports, approved by the Office of Health Services, of examinations by home physicians; (2) three visits in any one illness by a member of the Health Services Staff, office or residence (District of Columbia); (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Services†. All additional hospital charges for operating room, anesthetics, laboratory, X-ray, medications, or any special services must be paid by the student. Expenses incurred for examinations and treatment by specialists, such as eye refraction and provision of glasses; orthopaedic examinations and application of cast or other appliance; laboratory and X-ray work; and surgical operations must be paid by the student.

These medical benefits apply only to illness or disability incurred while currently enrolled in the University. They do not apply to illness or disability incurred between the last day of examinations for a semester or summer session and completion of registration for the next semester or summer session.

* A charge for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for this purpose.

† See rule (5) for exception.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) the Director of Health Services is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Services has authority to determine the necessity and length of hospitalization; (3) a student not currently enrolled or one who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination; (5) hospitalization is not available to those students availing themselves of other hospitalization coverage for the same illness.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the physical education departments.

HEALTH AND ACCIDENT INSURANCE

In addition to the above services, the Health Services Staff has arranged for Health and Accident Insurance, on an elective basis, for all full-time students. This policy covers the participant for 12 months, whether at home, at the University, or elsewhere.

Current yearly cost is \$34.56 (subject to change) payable at the fall registration. Arrangements can be made to pay in two equal installments at the fall and spring registrations.

This policy contract is between the individual student and the insurance carrier and is accepted at any hospital or emergency room that accepts this type of medical work. Details of the policy are available at the Health Services Office.

THE READING CENTER

The Reading Center, 2018 Eye Street, N.W., offers individual diagnostic and corrective services for all levels: primary, elementary, secondary, and adult. In addition special reading improvement classes are conducted on the high school, college, and adult levels.

A complete diagnosis includes psychological tests; vision, hearing, and dominance tests; and the various reading and spelling tests. Results are interpreted and a written report is presented in conference with the parents or the individual.

The special reading classes for high school students, college students, and adults are offered throughout the year at stated intervals. Special classes for study skills and spelling are also available. Emphasis is placed on improvement of vocabulary, speed, comprehension, and study skills. Machines such as the tachistoscope, rate accelerator, and controlled reader are also used for increasing speed of comprehension.

Reading Clinic.—The fee for individual diagnosis is \$60; for individual instruction, \$8 a lesson; for semi-individual instruction, \$6 a lesson; for instruction in small groups with common reading difficulties, \$5 a lesson.

Reading Improvement.—Classes are offered for students on high school and adult levels, including college and graduate students. Students are grouped according to needs; and emphasis is placed on vocabulary, study skills, spelling,

and speed of comprehension. The fee for full-time students currently registered in the University is \$60 for twenty lessons; for other clients, \$100 for twenty lessons.

All fees are payable in advance at the Office of the Cashier.

PSYCHOLOGICAL CLINIC

The George Washington University Psychological Clinic, 718 Twenty-first Street, N.W., offers services which are available primarily to students enrolled in the University and secondarily to high school students and to adults in the community. The latter are selected by the Clinic in accordance with training and research interests of the Clinic Staff.

The services are designed to assist individuals in the evaluation of their educational, personal, and social lives; diagnose academic difficulties and provide remedial measures such as study-habits instruction and programmed instruction; and refer individuals to qualified agencies for assistance with problems not handled by the Clinic. Behavior therapy, individual and group psychotherapy, and individual and group counseling are available.

The Clinic also provides special assessments including: diagnostic measures prescribed by the School of Engineering and Applied Science, admissions tests for the University and for other selected educational institutions, and some selected assessments for business and industry.

Fees.—For students who are currently registered as degree candidates in the University, the fee is \$20; for students currently enrolled in the University but not as degree candidates, the fee is \$60; for graduates of the University, \$60; for community clients, \$85. Fees for specialized testing are dependent upon the services involved. All fees are payable at the Office of the Clinic.

THE SPEECH AND HEARING CLINIC

The Speech and Hearing Clinic, Suite 804, Joseph Henry Building, 2100 Pennsylvania Avenue, N.W., offers diagnostic and remedial work for children and adults with such communication difficulties as stuttering, lisping, cleft palate speech, cerebral-palsied speech, and voice, articulatory, and hearing problems. Diagnostic and remedial work is also available for persons with nonstandard language usage due to such conditions as hearing loss, brain damage, mental retardation, and environmental factors.

Fees.—The fee for an initial evaluation is \$20. Fees for additional specialized testing are dependent on the testing involved. The fees for individual speech or hearing therapy range from \$3 to \$10 a session. Fees are reduced for full-time students enrolled in the University and for persons receiving group therapy. Fees are payable at the Office of the Cashier.

VETERANS EDUCATION

The Office of the Registrar, Luther Rice Hall, 2121 Eye Street, N.W., assists students entitled to educational benefits as veterans or war orphans with any problems which may arise concerning their benefits. This Office also processes certification of enrollment and attendance to the Veterans Administration so that monthly allowances will be paid.

When feasible, students entitled to benefits as veterans or war orphans should consult the Office of the Registrar prior to submitting application to the Veterans Administration. All such students should obtain the instruction sheet issued by the Office of the Registrar, which sets forth requirements to be fulfilled before certification of enrollment can be made to the Veterans Administration, and which includes other information of general interest.

The Veterans Administration is at 2033 M Street, N.W., Washington, D.C. 20421.

RESIDENCE HALL

Men, women, and married couples (no children) will be housed in Thurston Residence Hall, 1900 F Street, N.W. This is a modern, air-conditioned building.

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance.

All unmarried freshmen under the age of 21 who are enrolled for six or more hours of academic work during a summer session are required to live in the University Residence Hall or at home with their parents or guardians. In exceptional cases requests for permission to live elsewhere will be considered by the Housing Administrator, Office of the Dean of Women.

RESIDENCE HALL RATES FOR 1969 SUMMER SESSIONS*

| | <i>Multiple Occupancy</i> | <i>Single Occupancy</i> |
|----------------------------------|---------------------------|-------------------------|
| Monthly | \$80.00 | \$120.00 |
| Weekly | 20.00 | 30.00 |
| Daily | 2.85 | 4.30 |
| Each regular 5-week Session..... | 100.00 | 150.00 |

Residence hall payments are due and payable in advance. A student who fails to meet payment is subject to automatic suspension.

Forms for application, together with detailed information, may be obtained from the Housing Administrator.

Information concerning off-campus housing near the University is available at the Office of the Housing Administrator, Office of the Dean of Women, 2121 Eye Street, N.W.

STUDENT UNION

The Student Union, 2125 G Street, N.W., is the center for student life. From the cafeteria on the first floor to the reading room on the fourth floor, it is well planned to meet the students' need for meals, study, recreation, and activities. In addition to the recreation lounge and social lounge the Student Union provides office space for the Student Council and the other major student organizations.

The Student Activities Office, in the Student Union Annex, has information concerning the student organizations and campus events.

* The rates include linen service. Rates shown are subject to change.

STUDENT AND ALUMNI CAREER SERVICES OFFICE

The Student and Alumni Career Services Office, Woodhull House, 2033 G Street, N.W., provides assistance to degree candidates and alumni seeking full-time, part-time, temporary, or permanent employment.

The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration. The Office administers the On-Campus Industrial and Government Recruitment Interview Program for seniors and graduate students, in which private companies, government agencies, service organizations, public school systems, and universities participate. Prospective teachers may establish permanent credentials files in the Student and Alumni Career Services Office. This service includes files for alumni seeking college and university faculty and administrative positions. The Office also provides individual counseling for students and alumni wishing career guidance.

The Office is open from 9:00 a.m. to 5:00 p.m., Monday through Friday.

SOCIAL AND RECREATIONAL PROGRAM

The social and recreational program includes many varied activities and scheduled events. In addition to this campus program a great abundance of cultural as well as social and recreational opportunities is available to persons living in the metropolitan area. During the summer the University posts a weekly guide to all these on a bulletin board in the Student Union.

THE COLLEGES, SCHOOLS, AND DIVISIONS

INFORMATION CONCERNING SPECIFIC REQUIREMENTS for degrees is omitted from this catalogue. For such information, the student is referred to the catalogue of the school concerned.

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

Incoming liberal arts and science freshmen and all transfer students of less than junior class standing are registered in the lower division of Columbian College of Arts and Sciences. The lower division also provides the first two years of the prelegal and premedical programs; the preprofessional work required for admission to the School of Education, the School of Government and Business Administration, the School of Public and International Affairs; and a terminal curriculum in Accounting. The lower division is primarily concerned with providing (1) the personal and academic guidance needed by beginning college students and (2) the broad cultural foundations in language and literature, science, and social studies on which major field specialization in the upper division is built.

The upper division of Columbian College offers programs leading to Bachelor's degrees in the liberal arts and sciences.

THE DEGREES

Columbian College offers work leading to the following degrees: Associate in Arts, Bachelor of Arts, and Bachelor of Science. In cooperation with the School of Medicine, Columbian College offers work leading to the combined degrees of Bachelor of Arts and Doctor of Medicine. In cooperation with the Department of Pathology and the University Hospital, Columbian College offers work leading to the degree of Bachelor of Science in Medical Technology.

ENTRANCE REQUIREMENTS*

Requirements for admission to the freshman class are as follows:

1. An acceptable certificate of graduation from an accredited secondary school, showing at least fifteen units which must include four years of English; at least two years of one foreign language; two years of science, preferably with laboratory instruction; two years of social studies, one of which must be American history.

* Entrance requirements are established by the faculties of the several colleges, schools, and divisions.

The Office of Admissions, as agent for the faculties, administers regulations governing admission, readmission, and transfer.

ican history; and two years of college preparatory mathematics. It is to be noted that one unit of algebra, or the equivalent, is prerequisite to courses in chemistry and statistics, and that one unit in algebra and one unit in plane geometry, or the equivalent, are prerequisite to courses in mathematics and physics.

2. The principal's statement that the applicant is prepared to undertake college work.

3. College Entrance Examination Board scores, which must be submitted on the Scholastic Aptitude Test and the English Composition Achievement Test.

A person who does not present all of the formal requirements stated above may request the Office of Admissions to present his case to the Columbian College Committee on Admission and Advanced Standing. The Committee may prescribe appropriate tests.

The applicant is responsible for:

- a. Sending the report form obtained from the Office of Admissions to his high school principal who will complete the form and forward it directly to the Office of Admissions.
- b. Requesting a report of scores on the Scholastic Aptitude Test and the English Composition Achievement Test to be sent to the Office of Admissions by the Educational Testing Service, 20 Nassau Street, Princeton, N.J. 08540, or 1947 Center Street, Berkeley, Calif. 94704. Write directly to the Board for information as to testing dates, fees, and center locations.

MAJOR FIELDS

Curricula leading to the degree of Bachelor of Arts are available in the following major fields:

American Civilization
Anthropology
Applied Statistics
Art History and Theory
Biology
Botany
Chemistry
Classical Archeology and Greek
Dramatic Art
Economics
English
Fine Arts
French Language and Literature
Geography
Geology
Germanic Languages and Literatures
History
Journalism
Latin

Latin American Studies
Mathematical Statistics
Mathematics
Music:
 Music History and Literature
 Music Theory
 Applied Music
Philosophy
Physics
Political Science
Psychology
Religion
Russian Language and Literature
Sociology
Spanish American Literature
Spanish Language and Literature
Speech
Speech Pathology and Audiology
Zoology

Curricula leading to the degree of Bachelor of Science are available in the following major fields:

Applied Statistics
Biology
Botany
Chemistry
Geology

Mathematical Statistics
Mathematics
Physics
Zoology

THE GRADUATE SCHOOL OF ARTS AND SCIENCES

The Graduate School offers work leading to the following degrees: Master of Arts, Master of Fine Arts, Master of Music, Master of Science, and Doctor of Philosophy. In cooperation with the School of Medicine, the Graduate School offers work leading to the combined degrees of Master of Science and Doctor of Medicine.

ENTRANCE REQUIREMENTS

The entering graduate student must have an approved Bachelor's degree from an accredited higher institution, an appropriate distribution of courses, and a superior quality of work in the major field.

GRADUATE FIELDS

| Subject | Degrees Offered |
|------------------------------------|-----------------|
| I. Humanities | |
| American Civilization | M.A. Ph.D. |
| American Literature | M.A. Ph.D. |
| Art: | M.F.A. |
| Ceramics | |
| Graphics | |
| Painting | |
| Sculpture | |
| Art History and Criticism | M.A. |
| Dramatic Art | M.F.A. |
| English Literature | M.A. Ph.D. |
| French Language and Literature | M.A. Ph.D. |
| Germanic Languages and Literatures | M.A. Ph.D. |
| Linguistics | M.A. |
| Museology | M.A. |
| Music: | Mus.M. |
| Applied Music | |
| Conducting | |
| Music Composition | |
| Music Theory | |
| Musicology | M.A. |
| Philosophy | M.A. |
| Religion | M.A. |
| Religious Education | M.A. |
| Russian Language and Literature | M.A. Ph.D. |
| Spanish American Literature | M.A. Ph.D. |
| Spanish Language and Literature | |
| II. Social Sciences | |
| Anthropology | M.A. Ph.D. |
| Economics | M.A. Ph.D. |
| Geography | M.A. Ph.D. |
| History | M.A. Ph.D. |
| *International Relations | |

* The School of Public and International Affairs offers a Master of Arts field in International Affairs.

| | | |
|------------------------|------|-------|
| Latin American Studies | M.A. | |
| Political Science | M.A. | Ph.D. |
| Sociology | M.A. | Ph.D. |

III. Physical and Mathematical Sciences

| | | |
|-------------------------|------------|-------|
| Applied Statistics | M.S. | |
| Chemistry | M.S. | Ph.D. |
| Geochemistry | M.S. | Ph.D. |
| Geology | M.A., M.S. | Ph.D. |
| Mathematical Statistics | M.A. | Ph.D. |
| Mathematics | M.A. | Ph.D. |
| Physics | M.A. | Ph.D. |

IV. Biomedical and Related Sciences

| | | |
|--------------------------------|------|-------|
| Anatomy | M.S. | Ph.D. |
| Biochemistry | M.S. | Ph.D. |
| *Biological Sciences | M.S. | Ph.D. |
| Biophysics | | Ph.D. |
| Human Ecology | | Ph.D. |
| Microbiology | M.S. | Ph.D. |
| Pathology | | Ph.D. |
| Pharmacology | M.S. | Ph.D. |
| Physiology | M.S. | Ph.D. |
| Psychology | M.A. | Ph.D. |
| Speech Pathology and Audiology | M.A. | |

THE NATIONAL LAW CENTER

The National Law Center offers work leading to the degrees of Juris Doctor, Master of Laws, Master of Comparative Law, Master of Comparative Law (American Practice), and Doctor of Juridical Science.

Forms for application for admission may be obtained from the Office of the Dean of the National Law Center, 720 Twentieth Street, N.W., Washington, D.C. 20006.

Applications should be accompanied by an application fee of \$25 for a degree candidate, \$5 for an Unclassified Student. Two recent signed photographs must accompany the application for a degree candidate.

See "Registration," pages 15-16, for provisions applicable to students who plan to take the New York Bar examination.

ENTRANCE REQUIREMENTS

Unclassified Students.—The following types of students may be admitted to the National Law Center as Unclassified Students:

1. A candidate for a Bachelor of Laws or Juris Doctor degree with an above-average record at another law school which is a member of the Association of American Law Schools or is approved by the American Bar Association, may, at the discretion of the Dean, be admitted as an Unclassified Student to earn credits for transfer to the other law school.

* Botany, Botany, and Zoology

2. Graduates of law schools which are members of the Association of American Law Schools or are approved by the American Bar Association may be admitted to take advanced courses without pursuing degree programs. Applicants with inferior records will not be admitted.

Unclassified Students participate in the work of the course, take examinations, and have their grades recorded. Credit earned as an Unclassified Student cannot be credited toward a degree at this institution.*

For the Degree of Juris Doctor.—Students from other law schools which are members of the Association of American Law Schools or are approved by the American Bar Association may apply for transfer to this Law Center with advanced standing. No new students are admitted as candidates for the degree of Juris Doctor in the summer term.

For the Degree of Master of Laws.—A Bachelor's degree from an accredited college or university† and a Bachelor of Laws or Juris Doctor degree from a law school which is a member of the Association of American Law Schools or is approved by the American Bar Association are required. The applicant must demonstrate (by a B average or equivalent performance measure, high class standing, Law Review experience, positions held, or professional achievements) that he is capable of Master's level work. Advanced standing is not granted for credits earned while a candidate for the first degree in law.

For the Degree of Master of Comparative Law and Master of Comparative Law (American Practice).—The following are required: (1) the successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycee, or liceo; and (2) graduation in law from a recognized foreign university.

For the Degree of Doctor of Juridical Science.—A Bachelor of Arts or equivalent degree from an approved college or university†; a Bachelor of Laws or Juris Doctor degree, earned with high rank, from a law school which is a member of the Association of American Law Schools or is approved by the American Bar Association; outstanding capacity for scholarly work in the field of law; and faculty approval of the applicant's dissertation topic. The applicant must submit an outline of his proposed topic in some detail, indicating by chapter and division within chapter the exact scope of the project. There should be a bibliography for each chapter listing books, reports, cases, and Law Review articles to be considered. Although the outline cannot predict every detail of the subsequent research, it must be sufficiently definite to afford the faculty a basis for evaluation.

Continuing Legal Education Students.—A simplified admission and registration procedure is used for members of the bar who wish to take courses on a noncredit basis.

THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE

The School of Engineering and Applied Science offers courses leading to the degree of Bachelor of Science in the following areas: Civil Engineering, Electrical Engineering, Measurement Science, and Mechanical Engineering. Graduate programs lead to the degrees of Master of Science, Master of Engineering Administration, and Doctor of Science.

* The Dean is authorized to make exceptions in appropriate cases for Master's and doctoral students.
† The Dean is authorized to make exceptions in appropriate cases.

ENTRANCE REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE

The School admits those applicants who can benefit themselves and society by disciplined intellectual effort in its environment.

Admission is the first selective step in a long series of qualifying steps the student will take in his progress toward professional competence in engineering, and indicates the School's belief that the applicant has at least the minimum preparation and ability to complete the curriculum successfully.

The applicant must be of good character and must have an academic background appropriate for the program of studies contemplated.

Consideration for admission is based on the following:

1. An acceptable certificate of graduation from an accredited high school showing at least fifteen units*;
2. The principal's statement that the applicant is prepared to undertake college work;
3. Scores on the following College Entrance Examination Board tests: the Scholastic Aptitude Test, the English Composition Achievement Test; and a Level I (Standard) or Level II (Intensive) Mathematics Test—Level I preferred.

The qualifications of applicants who, because of unusual circumstances, do not meet the above requirements will be considered by the School, which may prescribe admission tests.

Nine and one-half of the fifteen units required for entrance must be distributed as follows: three in English, two in algebra, one in plane geometry, one-half in plane trigonometry, one in physics or chemistry, and two in one foreign language or history. General science may not be counted in satisfaction of the science requirement but may be counted as an elective unit.

It is recommended that *both* physics and chemistry be studied in high school. A high school course in solid geometry is recommended as a firm foundation for college mathematics.

An applicant must arrange to have sent directly from his school to the Office of Admissions the academic record of his first seven terms in secondary school, together with a personal evaluation and recommendation from his principal. This information may be supplied on a form provided by the University or on a standard form used by the secondary school provided all essential information is included.

Quantitative Deficiency.—A graduate of an approved high school who lacks not more than two units of the required subjects and who presents fifteen acceptable units may be admitted to a prescribed program which includes courses to make up his deficiencies.

ENTRANCE REQUIREMENTS FOR THE MASTER'S DEGREES

Admission to graduate study toward a Master's degree requires an appropriate Bachelor's degree from a recognized institution and evidence of capacity for productive work in the field selected, as indicated by undergraduate grades, Graduate Record Examination scores, and similar data.

An applicant who has significant deficiencies in preparation may be required to take prescribed undergraduate courses as an unclassified student before being

* A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods of prepared classroom work.

admitted to graduate student status. In some cases, if such deficiencies are minimal, he may be admitted to graduate student status and allowed to take a limited number of graduate courses while completing the undergraduate courses in which he is deficient. In no case may the undergraduate courses thus taken fulfill any part of the requirements for the Master's degree.

ENTRANCE REQUIREMENTS FOR THE DOCTOR'S DEGREE

The applicant must have adequate preparation for advanced study, including a satisfactory Master's degree, or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. Well in advance of the opening of the semester for which the student seeks admission, he should correspond with and preferably have a personal interview with the Dean or department chairman of his proposed field of study, to discuss the University's facilities for guidance in this field, the applicant's qualifications, and the possibilities of an effective doctoral program.

THE SCHOOL OF EDUCATION

The School of Education prepares teachers, counselors, and administrators for the higher ranges of educational service and offers opportunities to teachers of experience to extend their education. The schedule of courses is arranged to meet the needs of employed students as well as those able to devote full time to their studies. Students pursuing programs involving teacher certification must make provision to student-teach in the fall or spring semester during hours when public schools are in session. The School offers both graduate and undergraduate work.

THE DEGREES

The School of Education offers work leading to the following degrees: Bachelor of Arts in Education, Bachelor of Science in Physical Education, Master of Arts in Education, Master of Arts in Teaching, Education Specialist, and Doctor of Education.

ENTRANCE REQUIREMENTS

For the Bachelor's Degrees.—The satisfactory completion of two years of approved college work, or graduation from an approved two-year normal school, or the equivalent, is required.

For the Degree of Master of Arts in Education.—A Bachelor's degree from an accredited college, or the equivalent, a score on a required aptitude examination, and the approval of the Committee on Admission and Advanced Standing are required.

For the Degree of Master of Arts in Teaching.—To be admitted as a student-intern, an applicant must (1) have a Bachelor's degree from an accredited liberal arts institution, including courses related to the general education requirements for teacher certification; (2) show evidence of interest in children and a sincere desire to teach; (3) submit three written references attesting to quality of academic record and personality; (4) submit a score on the Aptitude Test of the Graduate Record Examination or the Miller Analogies Test; and (5) be

interviewed by the University Selection Committee, or under arrangements specified by the Committee and approved by the Dean of the School of Education.

For the Degree of Education Specialist.—The degree of Master of Arts in Education from this University, or the equivalent; a satisfactory score on the Miller Analogies Test or the Graduate Record Examination; and two years of successful pertinent experience. Each applicant must be interviewed and recommended by a staff member of the School of Education or by a representative in the candidate's locality appointed by the Dean.

For the Doctor's Degree.—The applicant must have adequate preparation for advanced study, including graduate work in fields prerequisite to his objective equivalent to that required for the degree of Master of Arts in Education at this University, at least three years of successful pertinent educational experience, acceptable personal qualities, and capacity for creative scholarship and effective leadership.

THE SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION

The School of Government and Business Administration offers work leading to the following degrees: (1) Bachelor of Business Administration with a major in Accounting, Business Administration, Business and Economic Statistics, or International Business; (2) Master of Arts in Government in the fields of Business and Economic Statistics, Personnel Administration, Public Administration, or Urban and Regional Planning; (3) Master of Business Administration in the fields of Accounting, Business Administration, Health Care Administration, International Business, or Personnel Administration; (4) Master of Public Administration in the fields of Health Care Administration, Personnel Administration, Public Administration, or Urban and Regional Planning; (5) Master of Urban and Regional Planning; (6) Graduate Certificate in Health Care Administration (post-Master's study); (7) Doctor of Business Administration; and (8) Doctor of Public Administration.

ENTRANCE REQUIREMENTS FOR THE BACHELOR'S DEGREE

Bachelor of Business Administration.—The satisfactory completion of the Accounting, Business Administration, and International Business; or the Business and Economic Statistics curriculum in the lower division of Columbian College of Arts and Sciences; or the equivalent.

ENTRANCE REQUIREMENTS FOR THE MASTER'S DEGREES

A Bachelor's degree from an accredited college or university, with a quality-point index of 3.00 (*B average*) in the relevant undergraduate field.

Applicants for admission to all Master's degree programs are required to take either the Admission Test for Graduate Study in Business or the aptitude sections of the Graduate Record Examination, both of which are administered by the Educational Testing Service. Master of Business Administration applicants must submit scores on the Admission Test for Graduate Study in Business; Master of Arts in Government, Master of Public Administration, or Master of

Urban and Regional Planning applicants may submit scores on either the Admission Test for Graduate Study in Business or the Graduate Record Examination. Any test scores submitted must have been earned within three years of the date of application.

ENTRANCE REQUIREMENTS FOR THE DOCTOR'S DEGREES

Doctor of Business Administration.—The degree of Master of Business Administration, Master of Arts in an approved field, or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. Applicants must file results of the Admission Test for Graduate Study in Business administered by the Educational Testing Service.

Doctor of Public Administration.—The degree of Master of Public Administration, Master of Arts in an approved field, or the equivalent, together with acceptable personal qualities and a capacity for creative scholarship. Applicants must file results on either the Admission Test for Graduate Study in Business or the aptitude sections of the Graduate Record Examination administered by the Educational Testing Service.

THE SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

The School of Public and International Affairs offers work leading to the degrees of Bachelor of Arts with a major in International Affairs, Chinese Studies, or Public Affairs, Master of Arts in the field of International Affairs or Public Affairs, and the Certificate of the Institute for Sino-Soviet Studies.

ENTRANCE REQUIREMENTS FOR THE BACHELOR OF ARTS DEGREE

With a major in International Affairs, Chinese Studies, or Public Affairs.—The satisfactory completion of the appropriate curriculum in the lower division of Columbian College of Arts and Sciences, or the equivalent.

ENTRANCE REQUIREMENTS FOR THE MASTER OF ARTS DEGREE

A Bachelor's degree from an accredited college or university. Students admitted to candidacy must have attained a quality-point index of 3.00 (a *B* average) in the relevant undergraduate fields.

In the field of International Affairs.—The applicant's undergraduate program should include background courses corresponding to an undergraduate major in international affairs at this University.

In the field of Public Affairs.—An undergraduate major in public affairs, economics, history, or political science, depending on the field of specialization.

THE COLLEGE OF GENERAL STUDIES

The College of General Studies administers the off-campus degree programs over which Columbian College of Arts and Sciences, the School of Government and Business Administration, and the School of Public and International Affairs have degree-granting authority.

The College also offers credit courses in liberal arts, education, and business administration for which there is sufficient demand. Special programs are offered to meet the in-service needs of specified groups.

As a community service, a regular program of noncredit courses without entrance requirements is also offered.

Columbian College of Arts and Sciences has academic jurisdiction over programs leading to the degrees of Bachelor of General Studies (areas of concentration in history, mathematics, political science, and psychology); Bachelor of Science in Environmental Health; Bachelor of Science in Geodetic and Cartographic Science; and Bachelor of Science in Oceanography.

The School of Government and Business Administration has academic jurisdiction over programs leading to the degrees of Bachelor of Science in General Studies (areas of concentration in accounting and business administration), and Master of Science in Administration, which has replaced all of the Master's degrees formerly offered off campus except those offered in military cooperative programs.

ENTRANCE REQUIREMENTS

Off-campus Credit Courses.—A simplified procedure is used for admission and registration in off-campus courses. Transcripts of previous academic work are not required. Registration is restricted to those whose qualifications would indicate that they are able to carry the course successfully. Registration in an off-campus course does not constitute admission to degree candidacy in the University.

Noncredit Courses.—In general, noncredit courses will be open to any individual interested in enrolling. When a noncredit course is organized at the request of some particular agency or group, admission may be restricted to the students recommended by the sponsoring organization. A limit on the size of classes may have to be imposed in order to maintain the quality of instruction.

The separate catalogue of the College of General Studies, available at the College, 706 Twentieth Street, N.W., Washington, D.C. 20006, contains full information concerning programs, courses, entrance and degree requirements, and fees.

THE DIVISION OF UNIVERSITY STUDENTS

The Division of University Students makes the work of the University, in its several colleges and schools, accessible to five types of students who are not working toward a degree in this University (see page 14).

SPECIAL PROGRAMS AND WORKSHOPS

THE SUMMER SESSIONS is pleased to announce a carefully planned group of special programs and workshops devised to serve a variety of student needs and to utilize resources which are uniquely present at the University and in the Nation's Capital. These programs, which are described below, have been developed in the area of the humanities and in the area of social studies. They all have a strong academic orientation and will be taught by the regular faculty of the University or distinguished visitors from other institutions.

American Studies

FIRST SESSION

THIS PROGRAM will concentrate upon Negro life and culture in the United States, and will also include a course in contemporary American poetry. J. Saunders Redding is author of a series of distinguished books concerned with Afro-American life and thought, including *To Make a Poet Black* (1939), *No Day of Triumph* (1942), *They Came in Chains* (1950), *On Being a Negro in America* (1951), *The Lonesome Road* (1958), and *The Negro* (1967). A recipient of Rockefeller Foundation and Guggenheim fellowships, Mr. Redding was for many years a Professor at Hampton Institute, and was recently Director of the Division of Research and Publication at the National Endowment for the Humanities. He will teach a course on "The Mind of the Negro."

Mrs. Constance McLaughlin Green received the 1963 Pulitzer Prize in history for her *Washington: Village and Capital*. She is author of two other volumes concerned with Washington history, the most recent being *The Secret City: A History of Race Relations in the National Capital* (1967). Her many volumes include a history of Holyoke, Massachusetts (a pioneer study of industrial transformation), two volumes on American urban history, and histories for the Army and the Department of Defense. She will teach a course on "Negro Life in American Cities since 1860."

William Jay Smith, Consultant in Poetry to the Library of Congress, will teach the course in recent American poetry. Mr. Smith is author of four volumes of poetry: *Poems* (1947), *Celebration at Dark* (1950), *Poems, 1947-*

1957 (1957), and *The Tin Can and Other Poems* (1966). He has translated the poetry of Jules Laforgue, Andrei Voznesensky, and others, and has written a dozen books of poems for children. He has taught at Columbia University, Williams College, and Hollins College. He will teach a course on "American Poetry since World War II."

These courses may be taken for graduate credit with the approval of the instructor and the student's adviser. A descriptive brochure is available upon request from Associate Professor Clarence C. Mondale, Director, Summer Program in American Studies, Stuart Hall, George Washington University.

AMERICAN CIVILIZATION

175 *The Mind of the Negro* (3)

Redding

An examination of Afro-American thought and the individuals, movements, and organizations through which that thought found expression. The course will be structured chronologically. MTWThF 9:40-11 am.

176 *Negro Life in American Cities since 1860* (3)

Green

An examination of the main features of the Negro community that developed within American cities before the emergence of the ghetto, and of the changes the ghetto later imposed. An examination of the social structures of these cities within cities, their culture, their economic bases, their political organization, and the effects of the black rebellion of the 1960's. MTWThF 1:10-2:30 pm.

ENGLISH

164 *American Poetry since World War II* (3)

Smith

A study of poets who came into prominence after 1939, such as Roethke, Lowell, and Wilbur, and of other younger poets of the fifties and sixties. Emphasis will be upon a close critical reading of works by each poet. MTWTh 5:45-7:25 pm.

Communist Affairs

THE INSTITUTE FOR SINO-SOVIET STUDIES is again offering a program of related courses focused on the theory of communism and its political operation in Eastern Europe and Asia. These courses are broad enough to have general appeal as electives for the liberal arts student and sufficiently specific to have vocational utility for the teacher of social studies. Regular faculty members will offer nine courses in this program, five in the first session and four in the second. Each course carries 3 semester hours of credit. Students majoring in Political Science should consult with their advisers before registering for this work.

The following faculty will staff the courses in this program:

Andrew Gyorgy, *Professor of International Affairs*

Franz Michael, *Professor of International Affairs*

William R. Johnson, *Associate Professor of History*

Charles F. Elliott, *Assistant Professor of Political Science and International Affairs*

Richard C. Thornton, *Assistant Professor of History*

36 SUMMER SESSIONS

FIRST SESSION—JUNE 16 TO JULY 23

HISTORY

- 188 History of the Chinese Communist Movement (3)** Thornton
Survey of the leadership, ideology, structure, and operation of the Communist Party of China from its founding to the present. MTWThF
4:10–5:30 pm.
- 387 Readings in the History of Sino-Soviet Relations (3)** Thornton
MWF 6:10–8 pm.

POLITICAL SCIENCE

- 101 Far East in the Modern World (3)** Michael
General character of Far Eastern societies and their response to the impact of America, Europe, and Russia; American policy in Far East and influence of world communism. MTWThF 8:10–9:30 am.
- *115 Government and Politics in Eastern Europe (3)** Gyorgy
Study of contemporary social and ethnic structures, governmental systems, and international position of East European satellites. Emphasis on post-World War II political evolution and present status of Soviet satellite nations. MTWThF 11:10 am–12:30 pm.
- *161 Soviet Government and Politics (3)** Gyorgy
Analysis of influences in the formation of the Soviet system under Lenin, Stalin, and Khrushchev; the Soviet Communist Party; government and mass organizations; selected aspects of economic, cultural, social, and foreign policy. MTWThF 2:10–3:50 pm.

SECOND SESSION—JULY 24 TO AUGUST 29

HISTORY

- 187 History of Modern China (3)** Johnson
China since 1840, particular attention to political developments. MTW
ThF 4:10–5:30 pm.
- 396 Readings in Modern Far Eastern History (3)** Johnson
MWF 6:10–8 pm.

POLITICAL SCIENCE

- 160 Modern Communist Ideologies (3)** Elliott
Intensive study of 20th century communism; emphasis on its antecedents and possible evolution. Backgrounds, careers, and ideas of leading communist figures: Marx, Lenin, Stalin, Khrushchev, and Mao. MTWThF
4:10–5:30 pm.

* Political Science 112, 115, and 161 are related in their subject matter, and credit for only one of the three may be applied toward a degree.

163 Soviet Foreign Policy (3)

Elliott

Relations with United States, Third World, China; international communism; disarmament policy; instruments of foreign policy; interrelationships of domestic and foreign policies; ideology and foreign policy.
MTWThF 6-7:20 pm.

Dance Workshop**JUNE 16 TO JULY 3**

THE DEPARTMENT OF PHYSICAL EDUCATION FOR WOMEN is offering a three-week Modern Dance Workshop under the direction of Associate Professor Maida Withers. Advanced courses will be taught by a guest-artist teacher. At the conclusion of the workshop, student compositions and repertory will be presented in the University's theater. This coeducational program is open both to graduate and undergraduate students with previous experience in dance technique and a background in dance composition. From 1 to 3 semester hours of credit may be earned or courses may be audited. Graduate credit in the program may be arranged.

Additional information may be obtained from Associate Professor Maida R. Withers, Building J, George Washington University.

PHYSICAL EDUCATION***†56 Dance Technique and Theory (1)**

Techniques of contemporary modern dance. (Intermediate and advanced sections offered.) Prerequisite: the introductory dance elective offered in Physical Education 6, or equivalent. MTWThF 9:30-11 am.

***†110 Dance Composition II (1)**

Advanced problems in composition. MTWThF 1:10-2:30 pm.

***†120 Repertory (1)**

Study and performance of completed dance works. Admission by permission of instructor. MTWThF 3-4 pm.

Language Study in Paris**JULY 21 TO SEPTEMBER 2**

THE GEORGE WASHINGTON UNIVERSITY, in conjunction with the American College in Paris, offers this summer a six and one-half week language program in Paris led by a member of the Department of Romance Languages and Literatures. The program will include intensive training in grammar, composition, and conversation, and a series of lectures on French culture and civilization. The program will begin with an eleven-day tour of parts of France, Germany.

* May be repeated once for credit.

† Class begins on the day of registration.

Switzerland, and the Low Countries, followed by four weeks of classes in intensive language study at the American College.

Prerequisite: one year of college French with grades of *B* or better.

Detailed information concerning admission to this program should be obtained from the office of Assistant Dean Joseph L. Métivier, Jr., Monroe Hall, George Washington University.

AMERICAN COLLEGE COURSES

Intensive French (5)

Elementary, intermediate, or advanced French—18 hours per week. Language practice—5 hours per week.

French Culture and Civilization (1)

Lectures on French history, literature, and civilization. Visits to museums and places of historical and cultural interest in and around Paris.

Workshop in Producing Shakespeare

JUNE 16 TO AUGUST 29*

SPEECH AND DRAMA

157 Workshop in Producing Shakespeare (2)

Participation as an apprentice in minor role or technical work with an Equity Company in the Shakespeare Summer Festival production in the outdoor Sylvan Theatre at the Washington Monument. Hours arranged with Company rehearsals and performances. Registration limited. Application must be made by May 15. (For detailed information write Shakespeare Summer Festival, Suite 410, 1000 6th St., S. W., Washington, D.C. 20024.)

Secondary School Honors Program

THE OUTSTANDING SECONDARY SCHOOL STUDENT who wishes to enrich his academic background and participate in a stimulating introduction to college work is encouraged to seek admission to George Washington University's Secondary School Honors Program. The Honors Student is enrolled in regular college courses of his own choosing appropriate to his level of study, his background, and his aptitude as determined through consultation with his high school counselors and advisers at the University.

Since dormitory life is a vital part of the stimulating academic and cultural atmosphere of the campus and community, Honors Students will normally live in Thurston Hall, a modern, air-conditioned residence dormitory. Students from the immediate metropolitan area may commute, but they are encouraged to reside in the dormitory. Honors Students living in the dormitory are supervised by well-trained resident counselors. A varied extracurricular program

* Dates subject to change according to festival production schedule.

focusing upon the unique location of the University in the Nation's Capital has been planned to complement both the academic and social life of the campus.

Credit earned in the Program is applicable toward a degree at George Washington University should the student later matriculate here. The transfer of credit elsewhere depends upon the policies of the individual school to which the student might later apply.

All students admitted to the Program are appointed Scholars in the Secondary School Honors Program and receive scholarships for the five-week session. Resident students receive a scholarship of more than \$200 and pay only \$425 covering full tuition, board, and room. Commuting students receive a \$64 scholarship for each 3- or 4-hour course. The Program is designed to include a normal summer session of two courses.

Since the Honors Program is limited to 120 secondary school scholars, admission is competitive. A transcript of the applicant's grades to date, available test scores, and evidence of emotional and intellectual maturity are criteria for admission.

Application forms and further information may be obtained from Miss Jean M. Gladding, Director of the Secondary School Honors Program, Division of University Students, George Washington University, Washington, D.C. 20006.

No applications will be considered after May 1.

Summer Institutes in Mathematics

FIRST SESSION

THE DEPARTMENT OF MATHEMATICS, under a grant from the National Science Foundation, will offer two Summer Institutes for secondary school teachers of culturally deprived children. The first, for teachers who feel that their background in mathematics needs improvement, includes courses in basic concepts of mathematics and algebra from a modern viewpoint. The second, for teachers who have a better background or who have completed the courses offered in the first institute and wish to work toward a Master's degree, offers courses in calculus and finite mathematics. Both institutes are limited to teachers in the District of Columbia public schools.

For further information and application forms, address Assistant Professor Ruth Bari, Director, Summer Institutes in Mathematics, Monroe Hall, George Washington University.

COURSES OF INSTRUCTION

EXPLANATION OF COURSE NUMBERS

COLLEGES AND SCHOOLS OTHER THAN ENGINEERING AND APPLIED SCIENCE

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the Dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be taken for graduate credit.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be taken for graduate credit only upon the approval of the dean and the instructor at the time of registration. Such approval is granted only with the provision that students must complete additional work in order to receive graduate credit.

Third-group courses.—Courses numbered from 201 to 300 (in the Graduate School of Arts and Sciences, the School of Government and Business Administration, and the School of Public and International Affairs), courses numbered 201 to 400 (in the School of Education) are planned primarily for graduate students. They are open, with the approval of the instructor, to qualified seniors; they are not open to other undergraduates.

Fourth-group courses.—Courses numbered 301 to 400 in the Graduate School of Arts and Sciences and the School of Government and Business Administration are limited to graduate students; but they are primarily for doctoral candidates. In the School of Education fourth-group courses, numbered 401 to 500, are limited to graduate students with Master's degrees from accredited institutions.

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

Courses numbered from 1 through 199 are planned for undergraduate credit, although certain courses may be taken for graduate credit when arrangements are approved in advance by the instructor and the Dean. Courses numbered 201 to 300 are planned for graduate credit and may in certain instances be taken by qualified undergraduate students. Courses numbered from 301 to 400 are primarily for doctoral students.

SEMESTER HOURS OF CREDIT

The number of semester hours of credit given for the satisfactory completion of a course is in most cases indicated in parentheses after the name of the course.

The Schedule of Classes for the Summer Sessions, which will be available in April at the Office of the Registrar, will contain information about room assignments and instructors for courses.

The University reserves the right to change or withdraw any of the following courses.

Accounting

E.J.B. Lewis, *Chairman*

1-2 Introductory Accounting (3-3)

Preparation, uses, and limitations of financial reports. *Accounting 1*: basic financial reporting concepts and data accumulation and processing. *Accounting 2*: introduction to managerial accounting—financial programming, cost determination, and analysis of financial statements. *Accounting 1* is prerequisite to *Accounting 2*. **First Session:** *Accounting 1*; **Second Session:** *Accounting 2*. **Section A**—MTWThF 11:10 am–12:30 pm; **Section B**—MTWThF 6–7:20 pm.

***115 Survey of Accounting (3)**

Preparation, uses, and limitations of financial information in the management process. Not open for credit to accounting majors. **First Session:** **Section A**—MWF 6–8:25 pm. **Second Session:** **Section C**—MWF 5:35–8 pm.

121-22 Intermediate Accounting (3-3)

Accounting 121: accounting for assets and liabilities. Prerequisite: *Accounting 1-2* or permission of instructor. *Accounting 122*: partnership, corporation, consignment, and installment-sales accounting. Prerequisite: *Accounting 121* or permission of instructor. **First Session:** *Accounting 121*; **Second Session:** *Accounting 122*. MTWThF 6–7:20 pm.

193 Business Budgeting (3)

Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the management of commercial and industrial organizations. Prerequisite: *Accounting 1-2*. **First Session:** MTWThF 6–7:20 pm.

***215 Survey of Managerial Accounting (3)**

Nature, preparation, analysis, and interpretation of accounting reports; cost accounting, business budgeting, and internal accounting controls and their use in the management process. Prerequisite: *Accounting 1-2* or *115* or permission of instructor. **First Session:** **Section A**—MWF 8:10–10 pm. **Second Session:** **Section B**—MWF 6:10–8 pm.

* A special section of this course, *Accounting 115B*, for students in the Navy Graduate Financial Management Program, will be offered June 11 to July 31; hours to be arranged.
 * A special section of this course, *Accounting 215C*, for students in the Navy Graduate Financial Management Program, will be offered August 4 to September 6.

275 Internal Control and Auditing (3)

Internal accounting controls and review and appraisal of accounting systems, procedures, and managerial policies with respect to their effectiveness and profitableness. Prerequisite: Accounting 171 or permission of instructor. First Session: MWF 8:10-10 pm.

297 Accounting Reading and Research (3)

May be repeated once for credit. Both sessions: as arranged.

299 Thesis Seminar (3)

First Session: MWF 8:10-10 pm.

300 Thesis Research (3)

Second Session: as arranged.

American Civilization

Administered by the American Studies Program, R.H.Walker, *Director*

175 The Mind of the Negro (3)

First Session: MTWThF 9:40-11 am. (See American Studies program, page 35.)

176 Negro Life in American Cities since 1860 (3)

First Session: MTWThF 1:10-2:30 pm. (See American Studies program, page 35.)

Anthropology

R.K. Lewis, *Chairman*

Departmental prerequisite: Anthropology 1-2 is prerequisite to all other courses in Anthropology.

1-2 Introductory Anthropology (3-3)

Anthropology 1: survey of man's origin, physical evolution, and cultural history. *Anthropology 2:* survey of the world's cultures, illustrating the principles of cultural behavior. First Session: Anthropology 1; Second Session: Anthropology 2. MTWThF 9:40-11 am.

155 Primitive Religion (3)

Conceptions of the supernatural in nonliterate societies. Examination of religious beliefs and practices. Second Session: MTWThF 11:10 am-12:30 pm.

299 Thesis Research (3)

Both sessions: as arranged.

Art

L.P. Leite, *Chairman*

ART HISTORY AND THEORY

I Art Appreciation (3)

Language and function of art in its various media; development of styles, aesthetic principles, theories, and the ideas in art through the ages. Primarily for nonmajors. **First Session:** MTWThF 1:10-2:30 pm.

31-32 Survey of Western Art (3-3)

Survey of the arts in the Western World from prehistoric to modern times. A foundation for further study in the history of art. **First Session:** Art 31; **Second Session:** Art 32. MTWThF 9:40-11 am.

71-72 Introduction to the Arts in America (3-3)

Painting, sculpture, and architecture of America, with selected references to crafts and popular arts. *Art 71:* from Colonial beginnings to the Republican Age. *Art 72:* from early 19th century to the present. **First Session:** Art 71—MTWTh 5:45-7:25 pm. **Second Session:** Art 72—MTWThF 9:40-11 am.

105 Renaissance Art in Italy II (3)

High Renaissance and Mannerism. **First Session:** MTWThF 4:10-5:30 pm.

108 18th Century Art in Europe (3)

Development of painting, sculpture, and architecture. **First Session:** MTWThF 8:10-9:30 am.

112 Art of Egypt and the Ancient Orient (3)

Study of the art of Mesopotamia, Anatolia, Egypt, and Persia. **First Session:** MTWThF 11:10 am-12:30 pm.

113 Baroque Art in Italy (3)

Development of painting, sculpture, and architecture in 16th and 17th century Italy. **Second Session:** MTWThF 11:10 am-12:30 pm.

114 Baroque Art in the North (3)

Development in painting, sculpture, and architecture in the 16th and 17th centuries in Holland, Flanders, Spain, France, Germany, and England. **First Session:** MTWThF 9:40-11 am.

118 Medieval Art II (3)

Architecture, sculpture, and painting of the Romanesque and Gothic periods. **First Session:** MTWThF 1:10-2:30 pm.

141 Interior Decoration (3)

Principles of decoration dealing with furniture designs and ensemble layout, draperies, color, accessories, and lighting. **Second Session:** MTWThF 4:10-5:30 pm.

149 19th Century American Sculpture (3)

First Session: MTWTh 7:35-9:15 pm.

246 Seminar: Classical Art (3)

First Session: MTWThF 1:10-2:30 pm.

FINE ARTS

Fine Arts courses taught in University studios carry no material or laboratory fees; students must purchase their own materials. Laboratory and material fees for courses taught at the Corcoran School of Art are stated in the course description and are payable at the School.

Courses designated CSA are taught at the Corcoran School of Art.

Departmental prerequisite: Art 21-22 or permission of Department Chairman is prerequisite to all other studio courses in Art.

Fine Arts Courses numbered 121 through 281 may be repeated for credit with the approval of the Department.

21-22 Design I: Basic (3-3)

Fundamental studies of principles and elements of design. *Art 21:* study of two-dimensional design. *Art 22:* three-dimensional studies. **First Session:** Art 21A (CSA) and 22A (CSA)—MTWThF 1-4 pm. **Second Session:** Art 21B—MTWTh 5:45-7:25 pm; Art 22B—MTWTh 7:35-9:15 pm.

41-42 Drawing I (3-3) CSA

Mechanical and visual perspective, still life, landscape, interior and object drawing, collage, elements of composition, spatial illusion, and the graphic communication of ideas. **First Session:** Art 41A and 42A—MTWThF 9-12 am; Art 41B and 42B—MTWThF 1-4 pm; Art 41C and 42C—MTWTh 6:30-9:30 pm and laboratory as arranged.

51-52 Ceramics I (3-3) CSA

Basic techniques for clay preparation, hand forming, wheel throwing, and the application of slip glazes and vitreous glazes through workshop and illustrated lectures. Laboratory fee: Art 51, \$45; Art 52, \$45. **First Session:** Art 51A and 52A—MTWThF 1-4 pm; Art 51B and 52B—MTWTh 6:30-9:30 pm and laboratory as arranged.

61 Watercolor (3) CSA

Transparent and opaque watercolor, drawing fundamentals. **First Session:** MTWThF 9-12 am.

65-66 Painting I (3-3) CSA

Basic color composition and fundamental painting techniques. **First Session:** Art 65A and 66A—MTWThF 9-12 am; Art 65B and 66B—MTWTh 6:30-9:30 pm and laboratory as arranged.

81-82 Sculpture I (3-3) CSA

Basic sculptural and casting techniques, new materials, stone and wood carving. Laboratory fee: Art 81, \$10; Art 82, \$10. **First Session:** Art 81 and 82—MTWThF 9-12 am.

125-26 Painting II (3-3) CSA

Development of basic concepts carried into personal statement. **First Session:** Art 125A and 126A—MTWThF 1-4 pm; Art 125B and 126B—MTWTh 6:30-9:30 pm and laboratory as arranged.

127-28 Painting III (3-3) CSA

Exploratory efforts in the development of style, using advanced methods and materials. **First Session:** Art 127A and 128A—MTWThF 1-4 pm; Art 127B and 128B—MTWTh 6:30-9:30 pm and laboratory as arranged.

131-32 Ceramics II (3-3) CSA

Basic techniques in clay and glaze formation, advanced wheel throwing and hand forming. **Laboratory fee:** Art 131, \$45; Art 132, \$45.

First Session: Art 131A and 132A—MTWThF 1-4 pm; Art 131B and 132B—MTWTh 6:30-9:30 pm and laboratory as arranged.

***137 Workshop in Materials, Methods, and Techniques (3) CSA**

Drawing in charcoal, crayon, and pen; painting and preparation of grounds in tempera, encaustic, fresco buono, oil, watercolor, polymer, and mixed techniques; graphic techniques in woodcut, engraving, etching; modeling in clay and carving in wood and stone; mosaic. **First Session:** MTWThF 1-4 pm.

139 Design Workshop (3)

Exploration of design possibilities in wood, metal, textile, plastics, and other materials. **First Session:** MTWThF 9-12 am.

143-44 Serigraphy (3-3)

Advanced problems in serigraphy; emphasis on its aesthetic possibilities. **Prerequisite:** Art 57-58. **First Session:** Art 143—MTWThF 9-12 am; Art 144—MTWThF 1-4 pm.

153 Graphics II (3)

(Formerly *Printmaking II*)

Advanced relief, intaglio, lithographic, and other composite processes. **Prerequisite:** Art 57-58 or equivalent. **Second Session:** MTWThF 9-12 am.

157-58 Graphics III (3-3)

(Formerly *Printmaking III*)

Exploration of combined techniques and mixed media. **Prerequisite:** Art 153-54 or equivalent. **First Session:** Art 157A (CSA) and 158 (CSA)—MTWThF 9-12 am. **Second Session:** 157B—MTWThF 1-4 pm.

159-60 Drawing II (3-3) CSA

Study of the potential of design in growth, structure, form, texture, organization, color; mechanics of anatomy and figure drawing. **First Session:** Art 159 and 160—MTWTh 6:30-9:30 pm and laboratory as arranged.

163-64 Welding (3-3)

Special problems in welded sculpture. **First Session:** Art 163—MTWThF 1-4; Art 164A (CSA) and 164B (CSA)—MTWThF 9-12 am.

171-72 Calligraphy and Lettering (3-3) CSA

Consideration of the basic alphabets and their use in calligraphy, lettering, and typography. **First Session:** Art 171A—MTWThF 1-4 pm; Art 171B and 172—MTWTh 6:30-9:30 pm and laboratory as arranged.

*Required for majors in Art History and Theory.

179-80 Sculpture II (3-3) CSA

Three-dimensional design, assemblages, bas-relief techniques, and use of color; metal techniques; wood; new materials. Laboratory fee: Art 179, \$10; Art 180, \$10. **First Session:** Art 179 and 180—MTWThF 9-12 am.

189-90 Sculpture III (3-3) CSA

Relationship of sculpture to architecture. Reliefs and work in monumental scale. Selected students experiment in bronze. **First Session:** Art 189 and 190—MTWThF 9-12 am.

265-66 Painting IV (3-3) CSA

First Session: Art 265A and 266A—MTWThF 1-4 pm; Art 265B and 266B—MTWTh 6:30-9:30 pm and laboratory as arranged.

275 Painting V (3) CSA

First Session: MTWThF 1-4 pm.

279-80 Sculpture IV (3-3) CSA

First Session: Art 279 and 280—MTWThF 9-12 am.

281 Sculpture V (3) CSA

First Session: MTWThF 9-12 am.

Biological Sciences

I.B. Hansen, Chairman

Departmental prerequisite: Biological Sciences 1-2 is prerequisite to all second-group courses in Biology, Botany, and Zoology, except by permission of the instructor.

1-2 Introductory Biology (4-4)

Introductory course leading to all second- and third-group courses in biology, botany, and zoology; also provides the nonscience student with an understanding of the life sciences. Material fee, \$10 each session.

First Session: Biological Sciences 1; **Second Session:** Biological Sciences 2. **Section A—**MTWThF 9:40 am-1 pm; **Section B—**MTWThF 6-9:20 pm.

115 Cytology (4)

Morphological and physiochemical properties of plant and animal cells and their components. Analysis of slides, cytological techniques, and preparation of slides. Recommended: one year of chemistry. Material fee, \$11. **First Session:** MTWThF 6-9:20 pm.

127 Genetics (4)

Introductory course. Basic aspects of transmission of genetic traits with particular reference to the chemical basis of heredity and gene action. Material fee, \$8. **Second Session:** lecture, MTWThF 9:40-11 am; laboratory, MWF 11:10 am-1 pm.

145 Introduction to Vertebrate Embryology (3)

Origin and early development of the individual, formation of organ systems. Emphasis on the frog, chick, and pig, with reference to the human embryo. Material fee, \$8. **Second Session:** MTWThF 6-8:50 pm.

148 Histology (4)

Introduction to microscopical anatomy of normal tissues and organs. Material fee, \$8. **First Session:** MTWThF 1:10-4:30 pm.

171 Undergraduate Research (arr.)

Admission by permission of the staff member concerned. May be repeated for credit. **Both sessions:** as arranged.

295 Research (arr.)

Investigation of special problems. May be repeated for credit. **Both sessions:** as arranged.

299-300 Thesis Research (3-3)

First Session: Biological Sciences 299; **Second Session:** Biological Sciences 300. As arranged.

Business Administration

F.D. Grub, Chairman

51 Introduction to Business (3)

The business environment; the structure, activities, and problems of business enterprise; its contribution to society; careers in business. **First Session:** MTWThF 9:40-11 am.

102 Fundamentals of Management (3)

Planning, organizing, directing, coordinating, and controlling the activities of the administrative unit; evolution of management thinking. **Second Session:** MTWThF 1:10-2:30 pm.

105 Personnel Management (3)

The labor force and labor markets. Industrial personnel and manpower programs, organizations and policy in personnel activities. **First Session:** MTWTh 7:35-9:15 pm.

118 Introduction to Data Processing (3)

Basic principles and methods of data processing. Introduction to fundamentals, potentials, and problems of automatic data processing as a tool of management. **First Session:** MTWThF 4:10-5:30 pm.

131 Business Finance (3)

Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1-2. **Second Session:** MTWThF 9:40-11 am.

141 Basic Marketing Management (3)

Introduction to marketing and marketing management in relation to our total economy and business management, consumer and demand analysis, retailing, wholesaling, major marketing management problems and policies

with particular emphasis on major decision areas and tools. Prerequisite: Economics 1-2. First Session: MTWTh 5:45-7:25 pm.

161 Commercial Law: Contracts, Sales, Agency, Bailments (3)

First Session: MTWTh 7:35-9:15 pm.

162 Commercial Law: Negotiable Instruments, Property, Mortgages (3)

Second Session: MTWTh 7:35-9:15 pm.

176 International Business Theory and Policy (3)

Causal relationships underlying international business transactions, role of government in international trade, international agreements between private producers, trade with developing nations, developing international business policy. Second Session: MTWTh 5:45-7:25 pm.

191 Business Reports and Analyses (3)

Sources of management information, array and analysis of data, interpretation and presentation of findings. Second Session: MTWThF 11:10 am-12:30 pm.

209 Seminar: Personnel Management (3)

Discussion of industrial personnel and manpower management, and research in advanced problems. Second Session: MWF 8:10-10 pm.

231 Financial Decision Making (3)

(Formerly Corporate Financial Problems)

Functions and objectives of financial management, asset management, problems of internal financial analysis, rate-of-return analysis, financial forecasting, problems of capital demand and supply. Prerequisite: Accounting 215. Second Session: MWF 4:10-6 pm.

237 Investment Analysis (3)

Analysis of specific security investments; common and preferred stocks; corporate, government, and revenue bonds; sources of information. Second Session: MWF 8:10-10 pm.

241 Advanced Marketing Management (3)

Marketing management problems and policies in major decision areas of product planning, channels of distribution, advertising, personal selling, sales promotion, pricing, and development of integrated marketing programs. Tools useful in decision making. Case analysis. First Session: MWF 8:10-10 pm.

257 The Manager in the World Economy (3)

Analysis and discussion of problems in international business by use of the case method, including international market entry and expansion; operating policies, procedures, and problems of multinational companies; developing executives for international business. First Session: MWTTh 8:10-10 pm.

281 Purchasing Principles and Practices (3)

Industrial purchasing practices and principles. Organization and functions of the purchasing department. Types of purchase agreements, source selection, competition and negotiation, policies and ethics. First Session: MWF 2:10-4 pm.

284 Procurement Data Management (3)

Technical data and the procurement process, contract work statements, performance specifications, detailed design drawings, "or equal" purchase descriptions and other types of work statement. The impact of government policies on work statement preparation. Control of contract performance by configuration control and base line management systems. Proprietary data. **First Session:** MWF 6:10-8 pm.

298 Readings in Business (3)

Supervised readings in selected fields within business administration. Admission by permission of instructor. May be repeated once for credit. **First Session:** MWTh 6:10-8 pm.

299 Thesis Seminar (3)

Examination of thesis standards, research philosophy, and methodology. **First Session:** MWF 8:10-10 pm.

300 Thesis Research (3)

Second Session: as arranged.

Business and Public Administration

Administered by the Department of Business Administration, P.D. Grub,
Chairman

***201 Advanced Administrative Management (3)**

Advanced course in administration emphasizing principles and practices common to administrative units of all kinds. **First Session:** Section A—MWF 10:10-12 am; Section B—MWF 8:10-10 pm. **Second Session:** Section C—MWF 6:10-8 pm.

203 Mathematics for Management (3)

Mathematical concepts employed in the solution of management problems. Applications of analytical geometry, functions, elements of calculus, and linear algebra to optimization problems. **Prerequisite:** algebra. **First Session:** Section A—MWF 4:10-6 pm. **Second Session:** Section B—MWF 10:10-12 am.

204 Quantitative Factors in Administration (3)

Survey of quantitative techniques used in the solution of management problems. Potentials and limitations of mathematical models and proper areas for their application. Topics include probability; statistical decision theory; linear programming; waiting line, inventory replacement models. **Prerequisite:** Business and Public Administration 203 or equivalent. **Second Session:** MWF 4:10-6 pm.

207 Human Behavior in Organizations (3)

Individual, group, intergroup, and other human behavior and development; application of social science research to administration. Practical applications emphasized. **First Session:** Section A—MWF 6:10-8 pm. **Second Session:** Section B—MWF 8:10-10 pm.

* A special section of this course, Business and Public Administration 201D, for students in the Navy Graduate Financial Management Program, will be offered August 4 to September 6; hours to be arranged.

211 Leadership and Executive Performance (3)

Theories of managerial leadership; issues and problems associated with leadership in large organizations and at higher management levels; executive selection and development. Prerequisite: Business and Public Administration 201 or permission of instructor. Second Session: MWTh 6:10-8 pm.

218 Survey of Data Processing (3)

Fundamentals of automatic data processing; manual, punched card, and electronic data processing principles and procedures; basic machine language and advanced language programming techniques; phases of data systems development; the role of the manager in management information systems. Emphasis on proper use of data processing as another tool of management. Second Session: MWF 6:10-8 pm.

221 Management Information Systems Development and Application (3)

Development of management information systems, integration of data processing in operations of government or business, impact on management organization and decision making. Case studies. Prerequisite: Business and Public Administration 218 or 219, or permission of instructor. First Session: MWF 6:10-8 pm.

222 Seminar: Advanced Digital Computer Concepts (3)

Advanced problems in the design and application of computer systems. Admission by permission of instructor. Second Session: MWF 8:10-10 pm.

Chemistry

C.R. Naeser, *Chairman*

11-12 General Chemistry (4-4)

A year course: credit toward a degree at this University given on completion of Chemistry 12. Elementary course in general chemistry, including qualitative analysis. Prerequisite: one year of high school algebra. Laboratory fee, \$18 each session. First Session: Chemistry 11; Second Session: Chemistry 12. MWF 8:10 am-1 pm; TTh 8:10-11:10 am.

22 Introductory Quantitative Analysis (4)

Theory and practice of quantitative analysis by classical volumetric and gravimetric methods and introduction to instrumental analysis. Prerequisite: Chemistry 12. Laboratory fee, \$18. First Session: MTWThF 8:10 am-12:30 pm.

51-52 Organic Chemistry (3-3)

A year course: credit toward a degree at this University given on completion of Chemistry 52. Chemistry of the compounds of carbon. Prerequisite: Chemistry 12 or 16. First Session: Chemistry 51; Second Session: Chemistry 52. MTWThF 8:10-9:40 am.

53-54 Organic Chemistry Laboratory (1-1)

Laboratory complement of Chemistry 51-52. Prerequisite or concurrent registration: Chemistry 51-52. Prerequisite to Chemistry 54: Chemistry

53. Laboratory fee, \$12 a session. **First Session:** Chemistry 53; **Second Session:** Chemistry 54. MWF 9:50 am-1 pm.

295 Research (arr.)

Research on problems approved by the staff. Open to qualified students with advanced training. May be repeated once for credit. Laboratory fee, \$7.50 a semester hour. **Both sessions:** Hours and credits as arranged.

299-300 Thesis Research (3-3)

Laboratory fee, \$18 each session. **First Session:** Chemistry 299; **Second Session:** Chemistry 300. As arranged.

Chinese

Administered by the School of Public and International Affairs, H.M. Stout,
Dean

Chung-wen Shih, *Adviser*

5-6 Beginning Intensive Mandarin Chinese, Levels I-II (6-6)

Intensive beginners' course in fundamentals of grammar and pronunciation with graded reading and practice in writing. Listening comprehension and oral practice in language laboratory. Prerequisite to Chinese 6: Chinese 5 or 2. Laboratory fee, \$17.50 each session. **First Session:** Chinese 5; **Second Session:** Chinese 6. Classroom—MTWThF 9-11:45 am, tutorial—MTWThF 12:45-1:35 pm, laboratory—MTWThF 1:45-2:35 pm.

Classics

J.F. Latimer, *Chairman*

1-2 First-year Latin (3-3)

A year course: credit toward a degree at this University given on completion of Classics 2. Functional presentation of the essentials of the language, appropriate reading selections, development of English derivatives, introduction to Roman life and literature. **First Session:** Classics 1; **Second Session:** Classics 2. MTWThF 8:10-9:30 am.

108 Classical Mythology (3)

Mythology of the Greeks and Romans from the creation of the world: tales of gods, heroes, and great families that have influenced literature, art, and music. Prerequisite: Freshman English or equivalent. **Second Session:** MTWThF 11:10 am-12:30 pm.

113 Greek and Roman Drama (3)

Selected masterpieces of Greek and Roman tragedy and comedy. In English translation. **First Session:** MTWThF 11:10 am-12:30 pm.

Economics

C.E. Galbreath, *Chairman*

Departmental prerequisite: Economics 1-2 is prerequisite to all other courses in Economics.

1-2 Principles of Economics (3-3)

Survey of the major economic principles, institutions, and problems in contemporary life. Economics 1 is prerequisite to Economics 2. **First Session:** Economics 1 Section A—MTWThF 9:40-11 am, Section B—MTWTh 5:45-7:25 pm. **Second Session:** Economics 1 Section C—MTWThF 1:10-2:30 pm; Economics 2 Section A—MTWThF 9:40-11 am, Section B—MTWTh 5:45-7:25 pm.

101 Intermediate Microeconomic Theory (3)

Analysis of supply, demand, and pricing. **Second Session:** MTWThF 8:10-9:30 am.

102 Intermediate Macroeconomic Theory (3)

Theories of national income determination and growth. **First Session:** MTWThF 11:10 am-12:30 pm.

121 Money and Banking (3)

Nature of money, credit, commercial banking, and the other financial institutions in the U.S. monetary system. **Second Session:** MTWTh 5:45-7:25 pm.

181-82 International Economics (3-3)

Economics 181: fundamentals of the monetary theory and pure theory of international trade. *Economics 182:* analysis of major contemporary problems including balance of payments, international liquidity, and economic development. **First Session:** Economics 181; **Second Session:** Economics 182. MTWThF 11:10 am-12:30 pm.

195 Governmental and Industrial Economics (3)

Limited to students in the Navy Graduate Financial Management Program. **June 11 to July 31:** as arranged.

217-18 Survey of Economics (3-3)

For graduate students in fields other than economics; not open to graduate students in Economics. *Economics 217:* price theory. *Economics 218:* income and employment theory. **First Session:** Economics 217—MWTh 6:10-8 pm; Economics 218—TThF 9:10-11 am.

299-300 Thesis Research (3-3)

First Session: Economics 299 and 300A. **Second Session:** Economics 300B. As arranged.

Education

B.S. Root, *Chairman*

Departmental prerequisite: a degree from an accredited institution is prerequisite to all third-group courses in Education.

See also courses in Physical Education, pages 73-75, and in Special Education, pages 85-88.

FIRST 3-WEEK WORKSHOP SESSION—JUNE 17 TO JULY 3

Classes meet Monday through Friday. Each workshop course requires the full day; concurrent registration for another daytime course is not permitted. June 17 to 20—small group discussions, evening; June 23 to July 3—small group discussion and field work, afternoon.

108 Human Development, Learning, and Teaching (3)

Principles of effective teaching based on an understanding of human development and the nature of learning. Prerequisite: Psychology 22.

A 6-week course, June 17 to July 25: lecture MW 6:40-9 pm; conference 6-6:40 pm.

112A Educational Measurement (3)

Scope, needs, services to students, selection and construction of teacher-made tests, interpretation of tests for evidence purposes. Prerequisite: Education 108 and 123. June 17 to 20: lecture 3:45-5:45 pm. June 23 to July 3: lecture 10:10-12 am; conference 9:10-10 am.

*216 Education of Slow-learning Children (3)

Identification, nature, and needs of slow-learning elementary and junior high school children. Emphasis on diagnosis and treatment of learning difficulties. June 17 to 20: lecture 3:45-5:45 pm. June 23 to July 3: lecture 8:10-10 am; conference 10:10-11 am.

*219 Elementary School Classroom Procedures (3)

Current classroom practices; emphasis on planning, unit teaching, techniques in discipline; individual and group evaluation techniques, resources for learning, providing for individual differences. June 17 to 20: lecture 3:45-5:45 pm. June 23 to July 3: lecture 8:10-10 am; conference 10:10-11 am.

245 School and Community (3)

The school as an important member of a team of social agencies that builds the community. June 17 to 20: lecture 3:45-5:45 pm. June 23 to July 3: lecture 10:10-12 am; conference 9:10-10 am.

*251 Foundations of Guidance and Personnel Services (3)

Introductory survey: definitions, scope, principles, historical background, organization, services, emerging trends, and issues. June 17 to 20: lecture 3:45-5:45 pm. June 23 to July 3: lecture 8:10-10 am; conference 10:10-11 am.

* Prerequisite: adequate professional preparation.

***255 Secondary Education (3)**

Current proposals for improvement of secondary education. **June 17 to 20:** lecture 3:45–5:45 pm. **June 23 to July 3:** lecture 8:10–10 am; conference 10:10–11 am.

257 Educational and Occupational Development (3)

Theories of career development; structure of education, training, and work in the United States; sources, forms, collection, evaluation, and dissemination of educational-occupational information. **June 17 to 20:** lecture 3:45–5:45 pm. **June 23 to July 3:** lecture 10:10–12 am; conference 9:10–10 am.

316 Curriculum Developments in Elementary School Social Studies (3)

For experienced educational personnel. Research, techniques, materials, and innovative programs relating to the effective elementary school social studies curriculum. Admission by permission of instructor. **June 17 to 20:** lecture 3:45–5:45 pm. **June 23 to July 3:** lecture 8:10–10 am; conference 10:10–11 am.

320 Curriculum Developments in Elementary School Mathematics (3)

For experienced educational personnel. Research, techniques, materials, and innovative programs relating to the effective elementary school mathematics curriculum. Admission by permission of instructor. **June 17 to 20:** lecture 3:45–5:45 pm. **June 23 to July 3:** lecture 8:10–10 am; conference 10:10–11 am.

380 Sensitivity Training: Laboratory Method (3)

A sensitivity learning experience in human relations using unstructured group experience, individual feedback, experimentation, and practice. **June 17 to 27:** lecture and laboratory 9:10–12 am and 1:10–5 pm. **June 30 to July 3:** individual projects as assigned and conference.

Psyc 22A Introduction to Educational Psychology (3)

Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training. **June 17 to 20:** lecture 3:45–5:45 pm. **June 23 to July 3:** lecture 10:10–12 am; conference 9:10–10 am.

SECOND 3-WEEK WORKSHOP SESSION—JULY 7 TO JULY 25

Classes meet Monday through Friday. Concurrent registration for another daytime course is not permitted, because each workshop course requires the full day—lecture and conference in the morning; small group discussion and field work in the afternoon.

†115 Elementary School Teaching of Reading (3)

Introduction to methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 108 and 123, or teaching experience. **Lecture 10:10–12 am; conference 9:10–10 am.**

* Prerequisite: adequate professional preparation.

† This course may not be taken by students who have completed or plan to enroll in Education 111.

***207 Curriculum Materials (3)**

For experienced teachers. Construction of courses of study and classroom teaching aids, with direct application to students' own situations. Lecture 8:10-10 am; conference 10:10-11 am.

***223 Reading Problems (3)**

Elementary and secondary school reading difficulties; classroom and clinical techniques in solving reading problems. Prerequisite: one or more years of recent teaching experience. Lecture 10:10-12 am; conference 9:10-10 am.

***243 Human Relations in the Classroom (3)**

Principles and practices involved in interpersonal relationships between learner and teacher and among learners. Lecture 10:10-12 am; conference 9:10-10 am.

253 Analysis of the Individual for Purposes of Counseling (3)

Detailed study of individual analysis and appraisal techniques. Development of systematic case study. Prerequisite: Education 112 or equivalent. Lecture 8:10-10 am; conference 10:10-11 am.

***256 Secondary Education (3)**

Current problems in each subject-matter field. Lecture 8:10-10 am; conference 10:10-11 am.

***285 Student Activities (3)**

Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contest; particular attention to sponsorship, participation, finance, and evaluation. Lecture 10:10-12 am; conference 9:10-10 am.

352 Advanced Career Development (3)

Advanced workshop for experienced counselors; theory and uses of new educational media in guidance; field study of job opportunities in area business, industry, and government agencies. Admission by permission of instructor. Lecture 1:10-3 pm; field work 9:10-12 am.

357 Mental Hygiene (3)

Mental health problems; emphasis on needs of counselors, teachers, and others working with children and adolescents. Lecture 8:10-10 am; conference 10:10-11 am.

376 Student Personnel Work with College Groups (3)

(Formerly Education 248)

Principles and procedures of personnel work with campus groups. Promotion, limitation, and coordination of campus group activities and development of student leadership. Lecture 10:10-12 am; conference 9:10-10 am.

THIRD 3-WEEK WORKSHOP SESSION—JULY 28 TO AUGUST 15

Classes meet Monday through Friday. Concurrent registration for another day-time course is not permitted, because each workshop course requires the full day—lecture and conference in the morning; small group discussion and field work or laboratory in the afternoon.

*Prerequisite: adequate professional preparation.

114 Elementary School Music (3)

For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22. Lecture 10:10-12 am; conference 9:10-10 am.

***128 Children's Literature (3)**

Newer books for children and the children's classics, contribution of literature to child development, children's original expressions. Lecture 8:10-10 am; conference 10:10-11 am.

†208 Human Development (3)

Contribution of various disciplines to an understanding of human development throughout the life span; emphasis on practical implications of relevant research. Lecture 8:10-10 am; conference 10:10-11 am.

213 History of Education (3)

European backgrounds of American education. Lecture 1:10-3 pm; conference 3:10-4 pm.

†216 Education of Slow-learning Children (3)

Identification, nature, and needs of slow-learning elementary and junior high school children. Emphasis on diagnosis and treatment of learning difficulties. Lecture 8:10-10 am; conference 10:10-11 am.

†231 Secondary School Classroom Procedures (3)

Current classroom practices: teacher-pupil planning, group procedures, initiatory and culminating activities, individual and group evaluation techniques, teaching aids, etc.; review of recent literature. Lecture 8:10-10 am; conference 10:10-11 am.

†241 Education of the Gifted (3)

For classroom teachers. Nature and discovery of giftedness, provisions for the gifted in regular classes, experimental projects. Lecture 10:10-12 am; conference 9:10-10 am.

258 Techniques of Counseling (3)

Intensive study of educational and psychological processes involved in counseling interviews. Vocational, educational, and personal counseling problems. Prerequisite: 12 semester hours in testing and guidance, including Education 253 and 257. Lecture 10:10-12 am; conference 9:10-10 am.

†272 The Teacher and School Supervision (3)

Nature, organization, human relationships, and techniques. Lecture 10:10-12 am; conference 9:10-10 am.

317 Curriculum Developments in Elementary School Science (3)

For experienced educational personnel. Research, techniques, materials, and innovative programs relating to the effective elementary school science curriculum. Admission by permission of instructor. Lecture 8:10-10 am; conference 10:10-11 am.

* This course may not be taken by students who have completed or plan to enroll in Education 111.
† Prerequisite: adequate professional preparation.

375 Introduction to Student Personnel Work (3)*(Formerly Education 286)*

Student personnel services in American higher education. Personnel work as an integral part of the college program; introduction to the literature of the field. Lecture 10:10-12 am; conference 9:10-10 am.

SIX-WEEK SESSION—JULY 7 TO AUGUST 15**107 Elementary School Teaching Foundations (9)**

Limited to students in the M.A.T. Program in Elementary Education. A block course, dealing with the content of traditional courses in educational psychology; history of education; human development, learning, and teaching; society and the school; introduction to elementary education. 135 class hours, supplemented by field experience. MTWThF 9-12 am; field work—afternoon.

112B Educational Measurement (3)

This special section of Education 112 is limited to students in the M.A.T. Program in Elementary Education. Scope, needs, services to students, selection and construction of teacher-made tests, interpretation of tests for evidence purposes. Prerequisite: Education 108 and 123. MW 1-3 pm.

113 Elementary School Art (3)

For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 22. Material fee, \$5. TTh 6-9 pm.

123 Society and the School (3)

Historical and social development of education at local, national, and international levels; cooperation of the school with other community agencies; functions of school personnel. TTh 6:40-9 pm; conference 6-6:40 pm.

***217 Philosophy of Education (3)**

To help students formulate a personal philosophy of education. MW 1-3:20 pm; two conference hours as arranged.

***229 Administration of Elementary Education (3)**

For experienced teachers and administrators. Achieving instructional objectives, organizing and servicing teaching activities, coordinating school and community life. TTh 1-3:20 pm; conference MWF 1-2 pm.

***†233 Audio-visual Education (3)**

Selection, evaluation, and use of audio-visual materials; administrative problems in care, operation, maintenance, and use of such materials and equipment. Material fee, \$7. MW 6:40-9 pm; two conference hours as arranged.

***†259 Secondary School Administration (3)**

For experienced teachers and administrators with two years of secondary school teaching. Survey of administration including practices of the modern high school. MW 6:40-9 pm; two conference hours as arranged.

* Prerequisite: adequate professional preparation.

† Enrollees fully employed may not register for another course.

*261 **Practicum in Guidance (3)**

Supervised practical instruction. Prerequisite: graduate work in counseling. Admission by permission of the Department Chairman. MTW ThF 1-2 pm; two conference hours as arranged.

*†271 **The Teacher and School Administration (3)**

Role of federal, state, and local administrative units; school finance; legal controls; school plant; public support; improving teaching conditions. TTh 4:10-6 pm; two conference hours as arranged.

*†279 **Adult Education (3)**

Current concepts and objectives, agencies involved, programs on all levels—international through community. TTh 6:40-9 pm; two conference hours as arranged.

*284 **Administration of Higher Education (3)**

Government, organization, and administration of colleges and universities. MW 6:40-9 pm; conference 6-6:40 pm.

293-94 **Research (3-3)**

Individual research under guidance of a staff member. Program and conferences arranged with an instructor. As arranged.

*295 **Research Methods and Procedures (3)**

Required of all candidates for graduate degrees in education. To be taken early in the graduate program. Prerequisite: elementary course in statistics. Section A: TTh 1:10-3:30 pm; two conference hours as arranged. Section B: MW 6:40-9 pm; two conference hours as arranged.

*296 **Seminar: Educational Research (3)**

Analysis of scientific approaches to problems in education and evaluation of the application of research techniques. Required of all candidates for the Ed.D. degree and open to candidates for other advanced degrees. Prerequisite: Education 295 or equivalent. MW 4:10-6 pm; two conference hours as arranged.

*†297 **Personnel Administration (3)**

Organization and administration of personnel programs for educational institutions. Basic philosophy, principles, responsibilities, and functions. TTh 6:40-9 pm; two conference hours as arranged.

299-300 **Thesis Research (3-3)**

Required of Master of Arts in Education candidates writing Master's theses. As arranged.

*†301 **Data Processing in Education (3)**

Machine accounting and computer technology for counselors, teachers, and administrators. TTh 6:40-9 pm; two conference hours as arranged.

* Prerequisite: adequate professional preparation.

† Enrollees fully employed may not register for another course.

***332 Curriculum for Early Childhood (4)**

Lecture and field. Language arts, science, mathematics, social studies, and the creative arts, emphasizing adaptation to skills and needs of the young child; review of new programs. TTh 6:40-9 pm; conference 6-6:40 pm.

Engineering and Applied Science

The Department of Electrical Engineering (Louis de Pian, *Chairman*), administers courses in Electrical Engineering.

The Department of Engineering Administration (H.E. Smith, *Chairman*), administers courses in Engineering Administration.

The Department of Engineering Mechanics (G.M. Arkilic, *Chairman*), administers courses in Civil Engineering, Engineering Mechanics, and Mechanical Engineering. Graduate courses in Applied Science are also administered by the Department of Engineering Mechanics; undergraduate courses in Applied Science are interdepartmental.

EIGHT-WEEK COURSES—JUNE 17 TO AUGUST 8

APPLIED SCIENCE

59 Introductory Analytical Mechanics I (4)

Mechanics of particles and rigid bodies; virtual work, energy, and momentum principles. Deformable body mechanics; stress and strain concepts; bending, twisting, and buckling of slender beams. Prerequisite or concurrent registration: Applied Science 113. MW 6:10-9:30 pm.

113 Engineering Analysis I (3)

Analytical methods appropriate to the solution of engineering problems. Mathematical topics include ordinary differential equations, vector calculus, and integral theorems; elements of matrices; complex algebra. Prerequisite: Mathematics 24. TTh 6:10-8:40 pm.

211 Mathematical Methods in Applied Science I (3)

Methods and theory of functions of complex variables and partial differential equations and their application. Prerequisite: graduate status. MW 6:10-8:40 pm.

CIVIL ENGINEERING

298 Research (arr.)

Basic research projects. May be repeated for credit. Hours and credit as arranged.

299-300 Thesis Research (3-3)

As arranged.

ELECTRICAL ENGINEERING

153 Design of Switching Systems (3)

(Formerly Engineering 121 *Switching Networks*)

Switching algebra and Boolean logic, analysis and design of switching devices; design of combinational and sequential logic networks; minimiza-

tion techniques and their use in logic design; electronic implementation of logic; number systems and codes, geometric interpretation, card error-correcting codes; encoding and decoding; logic and electronic design of functional digital units. Prerequisite: Electrical Engineering 152 or permission of instructor. May be taken for graduate credit. MW 4:10-6:40 pm.

154 Digital Computer Design (3)

(Formerly Engineering 122 Digital Computers)

Logic and electronic design of functional digital units, design of computer subsystems, flow of information and logical flow diagrams in timing and control; design of memory, arithmetic, and I/O units; binary and decimal machine arithmetic; design of a digital computer. Prerequisite or concurrent registration: Electrical Engineering 153 or permission of instructor. May be taken for graduate credit. TTh 4:10-6:40 pm.

241 Information Theory I (3)

(Formerly Applied Science 277)

Laws and theorems of probability, statistical measure of uncertainty and information; noiseless coding, communication channels, channel capacity, fundamental theorems of information theory. Prerequisite: Electrical Engineering 142 or equivalent. MW 4:10-6:40 pm.

242 Information Theory II (3)

(Formerly Applied Science 278)

Error-correcting codes, parity-check coding, information sources, channels with memory, Markov Chains, continuous channels. Prerequisite: Electrical Engineering 241. TTh 4:10-6:40 pm.

298 Research (arr.)

Research as arranged. May be repeated for credit. Hours and credit as arranged.

299-300 Thesis Research (3-3)

As arranged.

ENGINEERING ADMINISTRATION

115 Engineering Analysis (3)

Solution of engineering problems using sets and functions; probability models; distributions and functions; statistical concepts and methods, including hypothesis testing, correlation, and regression. Prerequisite: Mathematics 24. MW 3:10-5:40 pm.

212 Engineering Administration II (3)

Comprehensive and systematic study of the administrative process with emphasis on industrial, scientific, and engineering environments. Planning: objectives, prediction, policies, plans and characteristics of plans. Organizing: theory of organization, structure, authority, specialization, delegation, staff and committees. Directing: leadership, managing human and material resources. Controlling: setting standards, evaluating performance, using system feedback data for correction and improvement. MW 3:10-5:40 pm.

255 Administration of Research and Development (3)

Study of contemporary practices of administrators of scientific and engineering research and development; the relation of these studies to accepted managerial concepts, and their effect on contemporary managerial hierarchies and organizational structures. TTh 6:10-8:40 pm.

269 Operations Research I (3)

Basic concepts and techniques of operations research as applied to problems in industrial, governmental, and military decision making. History and orientation of operations research; concept of quantitative decision making; decisions under certainty, risk and uncertainty; utility; allocation models. Game theory; queuing theory; inventory, sequencing, and replacement models; Monte Carlo, simulation, and gaming. Prerequisite: Engineering Administration 115 or equivalent. MW 6:10-8:40 pm.

298 Research (arr.)

Basic or applied research in engineering administration. May be repeated for credit. Hours and credit as arranged.

299-300 Thesis Research (3-3)

As arranged.

ENGINEERING MECHANICS**298 Research (arr.)**

Basic research projects. May be repeated for credit. Hours and credit as arranged.

299-300 Thesis Research (3-3)

As arranged.

MECHANICAL ENGINEERING**131 Thermodynamics (3)**

(Formerly Applied Science 85)

Fundamental thermodynamic concepts from classical and statistical viewpoints; thermal equilibrium and temperature; the first law of thermodynamics, energy analysis of thermodynamic systems. Approach to equilibrium, entropy and second law of thermodynamics, analysis of thermodynamic systems. Prerequisite or concurrent registration: Applied Science 59. TTh 6:10-8:40 pm.

298 Research (arr.)

May be repeated for credit. Hours and credit as arranged.

299-300 Thesis Research (3-3)

As arranged.

English

J.P. Reesing, Jr., *Chairman*

Students whose College Board English Composition Achievement Test scores suggest inadequate preparation may be assigned to English 1x or may be tested in vocabulary, spelling, grammar, standard usage, and writing skill, before placement in either English 1x or 1. Students whose scores indicate marked superiority will be allowed to waive the English 1 requirement.

All students enrolled in curricula leading to Bachelor's degrees in Columbian College (who are required to take one year of English composition and one year of literature in English, Classics, French, German, Italian, Slavic, or Spanish) will follow the sequence of English 1 or 1x, both semesters of one of the introductory literature courses, and English 40.

English 2 is the second half of the six-hour composition requirement of students *not* required to follow the Columbian College of Arts and Sciences sequence.

Departmental prerequisite: English 1 or 1x is prerequisite to all other courses in English. One of the following six-hour courses—English 51–52, 71–72, or 91–92; Classics 71–72; French 51–52; German 51–52; Italian 51–52; Slavic 91–92; or Spanish 51–52—is prerequisite to all second-group courses in English except English 125 and English 171–72.

ENGLISH COMPOSITION

A English for Foreign Students (3)

Reading and writing to assist the foreign student in overcoming deficiencies in the use of English. Special attention to spelling, syntax, grammar, idiom, and vocabulary. **First Session:** MTWThF 6–7:20 pm.

B English for Foreign Students (3)

For second-semester foreign students not ready for English 1. Writing of expository paragraphs and themes; outlining; reading for comprehension, vocabulary, and style. **First Session:** MTWThF 7:35–8:55 pm.

1 English Composition (3)

Analysis and practice of expository techniques with emphasis on unity, development, and organization; library research procedure. **First Session:** MTWThF 11:10 am–12:30 pm.

2 English Composition (3)

For second-semester freshmen not following the Columbian College sequence. Readings and practice in expository and argumentative techniques; research practice. Credit is not given to students with credit for English 40 or former 4. **Prerequisite:** English 1 or 1x. **Second Session:** MTWThF 9:40–11 am.

40 English Composition (3)

Second half of the 6-hour English Composition course required of Columbian College students. Critical analysis and practice in expository and argumentative techniques; research practice. Credit not given to students with credit for English 2. **Prerequisite:** English 1 or 1x and both semesters of one of the introductory literature courses. **Second Session:** MTWThF 11:10 am–12:30 pm.

ENGLISH LITERATURE

51-52 Introduction to English Literature (3-3)

Historical survey. Prerequisite: English 1 or 1x. First Session: English 51; Second Session: English 52. MTWTh 7:35-9:15 pm.

121 Medieval English Literature—Exclusive of Chaucer (3)

First Session: MTWThF 1:10-2:30 pm.

135-36 Shakespeare (3-3)

First Session: English 135; Second Session: English 136. MTWThF 4:10-5:30 pm.

161-62 Victorian Literature (3-3)

Poetry and prose. English 161: 1830-1858. English 162: 1859-1900.

First Session: English 161; Second Session: English 162. MTWTh 5:45-7:25 pm.

165 The 20th Century (3)

British poetry and criticism since 1900. First Session: MTWThF 9:40-11 am.

AMERICAN LITERATURE

71-72 Introduction to American Literature (3-3)

Historical survey. English 71: from the beginnings to the Civil War. English 72: from the Civil War to the present. Prerequisite: English 1 or 1x. First Session: English 71; Second Session: English 72. MTWThF 9:40-11 am.

164 American Poetry since World War II (3)

First Session: MTWTh 5:45-7:25 pm. (See American Studies program, pages 34-35.)

170 The American Short Story (3)

Historical development of the short story in America. Second Session: MTWThF 1:10-2:30 pm.

176 American Drama (3)

Historical and critical study of significant plays and forms since 1930.

First Session: MTWThF 11:10 am-12:30 pm.

278 Seminar: American Fiction (3)

Second Session: MWTh 6:10-8 pm.

For information concerning the American Studies program, see pages 34-35.

French

Administered by the Department of Romance Languages and Literatures,
J.A. Frey, *Chairman*

Placement Examination: a standardized placement examination given before registration is required of all entering students who wish to continue in college the language begun in high school. Upon completion of the examination, assignment is made to the appropriate course, with credit assigned on the usual basis.

Departmental prerequisite: French 3-4 or 6, or equivalent, is required (French 51-52 is recommended) as prerequisite to all second-group courses in French.

1-2 First-year French (3-3)

A year course: credit toward a degree at this University given on completion of French 2. For beginners. Pronunciation, conversation, grammar, composition, reading of modern French prose. Aural training, oral practice in language laboratory. Laboratory fee, \$17.50 a session.

First Session: French 1; **Second Session:** French 2. Classroom—MTWThF 9:40-11 am, laboratory—MTh 11:10-12 am.

3-4 Second-year French (3-3)

A year course: credit toward a degree at this University given on completion of French 4. Conversation, grammar, composition, reading of modern French prose, introduction to French civilization. Aural training, oral practice in language laboratory. Laboratory fee, \$17.50 a session. Prerequisite: French 1-2, 2x, or two years of high school French.

First Session: French 3; **Second Session:** French 4. Classroom—MTWThF 8:10-9:30 am, laboratory—MTh 9:40-10:30 am.

12 French Conversation and Composition (Intensive) (6)

Intensive, accelerated course which covers material of French 9-10. Two class meetings and one laboratory meeting every day. Laboratory fee, \$25. **First Session:** Classroom—MTWThF 9:40-11 am and MTWThF 1:10-2:30 pm, laboratory—MTWThF 9-9:30 am.

49 French for Graduate Students (0)

For graduate students preparing for reading examinations. No academic credit. Tuition fee, \$192. **First Session:** MTWThF 6-7:20 pm.

91 Analyse de texte (3)

Methodology and vocabulary of literary criticism; application of principles of *explication de texte* to selections from prose, drama, and poetry from the Renaissance to the present. **First Session:** MTWThF 1:10-2:30 pm.

109-110 Advanced French Conversation and Composition (3-3)

French 109: emphasis on diction. **French 110:** emphasis on style. Prerequisite: French 10 or equivalent and permission of instructor. **First Session:** French 109; **Second Session:** French 110. MTWThF 11:10 am-12:30 pm.

129 Contemporary French Literature (3)

Theater of the Absurd—in French. **First Session:** MTWThF 4:10-5:30 pm.

201 Grammar, Composition, and Stylistics (3)

For secondary teachers of the French language and graduate students preparing to teach in secondary schools. **First Session:** MTWThF 11:10 am–12:30 pm.

256 19th Century French Literature (3)

Flaubert and French Realism—in French. **Second Session:** MTWThF 4:10–5:30 pm.

299 Thesis Research (3)

First Session: as arranged.

For information concerning courses offered in a special program at the American College in Paris, see pages 37–38.

Geography and Regional Science

M.F. Gordon, *Chairman*

51 Introduction to Geography (3)

Interrelated processes affecting the character of landforms, hydrography, soils, vegetation, and climate; relevance of their world patterns to man. **First Session:** MTWThF 9:40–11 am.

52 World Regions (3)

Survey of major countries, synthesis and analysis of major world regions. **First Session:** MTWThF 11:10 am–12:30 pm.

***151 United States and Canada (3)**

First Session: MTWThF 9:40–11 am.

189–90 Readings in Geography (arr.)

First Session: hours and credit as arranged.

295 Research (arr.)

May be repeated once for credit. **First Session:** hours and credit as arranged.

299 Thesis Research (3)

First Session: as arranged.

300 Thesis Research (3)

First Session: as arranged.

A regional survey course providing an introduction to more detailed study of geographic regions. Characteristics, interrelationships, and area distributions of natural and cultural phenomena are considered. Strongly recommended for students interested in the study of specific areas are the regional courses in the departments of Economics, History, and Political Science.

Geology

Geza Teleki, *Chairman*

1-2 Introductory Geology (3-3)

Survey covering the principles of geology. Laboratory fee, \$10 each session. **First Session:** Geology 1; **Second Session:** Geology 2. MTWTh 9:40 am-1 pm.

103 Development of Scientific Thought (3)

Second Session: MTWTh 1:10-2:50 pm.

295 Research (2)

Research on problems approved by the Staff. Open to qualified students with advanced training. May be repeated for credit. **Both sessions:** as arranged.

299-300 Thesis Research (3-3)

First Session: Geology 299; **Second Session:** Geology 300. As arranged.

Germanic Languages and Literatures

L.G. Seeger, *Chairman*

Placement Examination: a standardized examination given before registration is required of all entering students who wish to continue in college the language begun in high school. Upon completion of the examination, assignment is made to the appropriate course, with credit assigned on the usual basis.

1-2 First-year German (3-3)

A year course: credit toward a degree at this University given on completion of German 2. Essentials of German grammar; translation of easy prose. Aural-oral practice in language laboratory. Laboratory fee, \$17.50 each session. **First Session:** German 1; **Second Session:** German 2. Classroom: MTWThF 6-7:20 pm. Laboratory: Section M—MTh 5-5:50 pm; Section N—MTh 7:30-8:20 pm.

3-4 Second-year German (3-3)

A year course: credit toward a degree at this University given on completion of German 4. Selections from modern German prose: continuation and review of grammar. Aural-oral practice in language laboratory. Laboratory fee, \$17.50 each session. Prerequisite: German 1-2 or two years of high school German. **First Session:** German 3; **Second Session:** German 4. Classroom: MTWThF 7:35-8:55 pm. Laboratory: Section M—MTh 5-5:50 pm; Section N—MTh 6:30-7:20 pm.

47 Beginning German for Reading Examination Candidates (0)

Specifically for graduate students with little or no German, who are preparing for reading examinations. No academic credit. Tuition fee, \$192. **First Session:** Section A—MTWTh 5:45-7:25 pm (for majors in the Humanities and Social Sciences); Section B—MTWTh 7:35-9:15 pm (for majors in Mathematics and Natural Sciences).

49 German Readings for Nonmajor Students (3)

Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of instructor. No academic credit for graduate students. Prerequisite: German 4 or German 47, or equivalent. **Second Session:** Section A—MTWTh 5:45–7:25 pm (for majors in the Humanities and Social Sciences); Section B—MTWTh 7:35–9:15 pm (for majors in Mathematics and Natural Sciences).

Health Care Administration

Leon Gintzig, *Chairman*

270 Research in Health Care Administration (3)

Field research. Primarily for doctoral candidates; open to other graduate students with consent of instructor. **Both sessions:** as arranged.

285 Readings in Health Care Administration (3)

Supervised readings in some special areas or subdivisions of health care administration. Primarily for doctoral candidates; open to other students by arrangement. **Both sessions:** as arranged.

293 Hospital Residency I (3)

First third of the twelve-month residency, beginning June 1 or July 1 of each year, has four major objectives: work experience under a qualified preceptor; periodic seminars with University staff; periodic written progress reports of work accomplished; and a final written report of a major investigation. Sections A, B, C, and D.

296 Hospital Residency II (3)

First third of the twelve-month residency, beginning June 1 or July 1 of each year. For selected students who take a second year of residency.

History

R.P. Sharkey, *Chairman*

Departmental prerequisite: History 39–40 or 91–92 is prerequisite to courses 108 through 158 and 187 through 196; History 71–72, to courses 167 through 185; either History 39–40, 71–72, or 91–92, to courses 162 through 166. Prerequisite to History 105–6 is either History 39–40, 91–92, or a background in science.

Prerequisite to all third-group History courses: the appropriate second-group preparation and consent of instructor.

Prerequisite to all fourth-group History courses: the appropriate second-group preparation and consent of instructor. Fourth-group History courses are limited to graduate students; but they are primarily for doctoral candidates.

39–40 European Civilization in Its World Context (3–3)

Primarily for freshmen. *History 39:* political, social, economic, and cultural history from ancient times to early modern era. *History 40:* from early modern era to present. Students cannot receive credit for both History 39–40 and 91–92. **First Session:** History 39—MTWThF

8:10-9:30 am; History 40A—MTWThF 11:10 am-12:30 pm. **Second Session:** History 40B—MTWThF 8:10-9:30 am.

71-72 Introduction to American History (3-3)

Primarily for sophomores. *History 71:* political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865. *History 72:* 1865 to present. **First Session:** History 71A—MTWThF 9:40-11 am; History 72A—MTWThF 6-7:20 pm. **Second Session:** History 71B—MTWThF 6-7:20 pm; History 72B—MTWThF 9:40-11 am.

150 European Diplomatic History since 1890 (3)

The European state system; diplomatic practices and relations since the Congress of Vienna; emphasis on policies and actions of the great powers and their statesmen. Students cannot receive credit for both History 150 and 157. **First Session:** MTWThF 6-7:20 pm.

175 U.S. Political History (3)

To the Civil War. **First Session:** MTWThF 9:40-11 am.

182 U.S. Diplomatic History since 1898 (3)

Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; activities of American secretaries of state and diplomatic agents. **First Session:** MTWThF 1:10-2:30 pm.

185 Representative Americans (3)

(Formerly History 173)

Significant and pivotal personalities in government, business, science, religion, journalism, the arts, and social reform. **Second Session:** MTWThF 8:10-9:30 am.

187 History of Modern China (3)

Second Session: MTWThF 4:10-5:30 pm. (See Communist Affairs program, pages 35-37.)

188 History of the Chinese Communist Movement (3)

First Session: MTWThF 4:10-5:30 pm. (See Communist Affairs program, pages 35-37.)

194 History of the Modern Near East (3)

Beginning with Napoleon's invasion of Egypt. Interaction of Europe with Western Asia, emphasizing such international issues as the Turkish Straits; Suez; Anglo-French imperialism; Balkan, Arab, and Turkish nationalism; and the recent Soviet intrusion into the area. **First Session:** MTWThF 4:10-5:30 pm.

275 Research Seminar: U.S. Political History (3)

Prerequisite: History 175-76 or equivalent. **First Session:** MWF 11:10 am-1 pm.

291 Research Seminar: 20th Century Problems—Era of World War I (3)

First Session: TTh 1:10-4 pm.

299-300 Thesis Research (3-3)

Both sessions: as arranged.

372 Readings in American Social History (3)

Second Session: TTh 2:10-5 pm.

387 Readings in the History of Sino-Soviet Relations (3)

First Session: MWF 6:10-8 pm. (See Communist Affairs program, pages 35-37.)

396 Readings in Modern Far Eastern History (3)

Second Session: MWF 6:10-8 pm. (See Communist Affairs program, pages 35-37.)

Institute for Sino-Soviet Studies

For information concerning the Communist Affairs program, see pages 35-37.

Latin

See "Classics."

Law

A list of courses to be offered during the summer of 1969 at the National Law Center will be available in a Law Center announcement scheduled to be issued during January, 1969. Copies of this announcement may be obtained from the National Law Center.

Mathematics

Hewitt Kenyon, Chairman

Placement Examination: new students registering for Mathematics 21 are required to take a placement examination.

Departmental prerequisite: Mathematics 24 is prerequisite to all second-group courses in Mathematics. Exception to this regulation may be made for Mathematics 101, 122, and 124. Students anticipating a substantial concentration in mathematics should consult with the Department about early completion of these courses.

3 College Algebra (3)

Equivalent to second-year high school algebra. Prerequisite: one year each of high school algebra and high school geometry. **First Session:** MTWThF 6-7:20 pm.

6 Plane Trigonometry (3)

Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3 (or concurrent registration therefor). **Second Session:** MTWThF 6-7:20 pm.

9 General Mathematics I (3)

For students electing Mathematics 9 and 10 as a terminal sequence. Numerals and numbers, number bases, mathematical systems, sets, propositional logic, and truth values. Prerequisite: two years of high school mathematics. **First Session:** Section A—MTWThF 8:10–9:30 am. **Second Session:** Section B—MTWThF 4:10–5:30 pm.

10 General Mathematics II (3)

Number systems, Euclidean and non-Euclidean geometry, graphs, functions, introduction to analytic geometry. Prerequisite: Mathematics 9. **Second Session:** MTWThF 8:10–9:30 am.

15 Finite Mathematics I (3)

Introduction to logic, sets, and probability. Prerequisite: two years of high school mathematics. **First Session:** MTWThF 9:40–11 am.

16 Finite Mathematics II (3)

Vectors and matrices, mathematics of finance and accounting, linear programming, introduction to game theory. Prerequisite: Mathematics 15. **Second Session:** MTWThF 9:40–11 am.

21 Calculus I (3)

Elementary concepts of analytic geometry. Differentiation of algebraic functions with applications. Prerequisite: Mathematics 3 and 6; or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry; or equivalent. **First Session:** Section A—MTWThF 11:10 am–12:30 pm. **Second Session:** Section B—MTWThF 6–7:20 pm.

22 Calculus II (3)

Differentiation and integration of transcendental functions and applications, topics in analytic geometry. Prerequisite: Mathematics 21. **First Session:** Section A—MTWThF 6–7:20 pm. **Second Session:** Section B—MTWThF 11:10 am–12:30 pm.

23 Calculus III (3)

Techniques of integration, vector concepts, improper integrals, polar coordinates, infinite series. Prerequisite: Mathematics 22. **First Session:** MTWThF 1:10–2:30 pm.

24 Calculus IV (3)

Solid geometry, multiple integration and partial differentiation with applications, line and surface integrals, differential equations. Prerequisite: Mathematics 23. **Second Session:** MTWThF 1:10–2:30 pm.

107 Introduction to Algebraic Topology (3)

Prerequisite: Mathematics 122 and 139, or permission of instructor. **Second Session:** MTWThF 6–7:20 pm.

111 Mathematics for Engineers and Physicists I (3)

Differential equations, linear algebra. **First Session:** MTWThF 7:35–8:55 pm.

112 Mathematics for Engineers and Physicists II (3)

Fourier series, Laplace transformation, partial differential equations. Prerequisite: Mathematics 111. **Second Session:** MTWThF 7:35–8:55 pm.

113 Graph Theory (3)

Directed and undirected graphs; unicursal graphs; shortest paths; Hamilton circuits; incidence, circuit, and cut-set matrix relations; coloring problems; network flow. **First Session:** MTWThF 6–7:20 pm.

122 Introduction to Abstract Algebra (3)

First Session: MTWThF 7:35–8:55 pm.

124 Introduction to Matrix Theory (3)

Elementary theory of finite vector spaces, determinants, equivalence, matrices with polynomial elements, similarity of matrices. **Second Session:** MTWThF 7:35–8:55 pm.

139 Advanced Calculus I (3)

Review and extension of elementary one-variable calculus, emphasis on the theoretical foundations. Prerequisite: Mathematics 24 or equivalent. **First Session:** MTWThF 9:40–11 am.

140 Advanced Calculus II (3)

Calculus of several variables. Prerequisite: Mathematics 139 or equivalent. **Second Session:** MTWThF 9:40–11 am.

157 Introduction to Complex Variable Theory (3)

Prerequisite: Mathematics 139. **Second Session:** MTWThF 6–7:20 pm.

270 Tensor Analysis (3)

First Session: MTWThF 6–7:20 pm.

284 Order Topological Spaces (3)

Prerequisite: Mathematics 282 or equivalent, or permission of instructor. **First Session:** MTWThF 7:35–8:55 pm.

299–300 Thesis Research (3–3)

Both sessions: as arranged.

Music

George Steiner, *Chairman*

MUSIC HISTORY AND LITERATURE

3 Introduction to Music (3)

Introductory history of musical styles, related to listening; elements and materials of music. **First Session:** Section A—MTWTh 5:45–7:25 pm. **Second Session:** Section B—MTWThF 11:10 am–12:30 pm.

4 Survey of Music Literature (3)

Introductory study of musical forms, structures, and textures; aural analysis of selected literature. **First Session:** Section A—MTWThF 11:10 am–12:30 pm. **Second Session:** Section B—MTWTh 5:45–7:25 pm.

106 Music of the Classic Period (3)

Study of styles, techniques, and literature from the 18th century schools through Haydn, Mozart, and Beethoven. **First Session:** MTWThF 9:40–11 am.

MUSIC THEORY

1 Elements of Music Theory (3)

Notation, scales, keys, intervals, terms, rhythms, ear-training, sight-singing, elementary keyboard harmony, melodic and harmonic dictation. **Second Session:** MTWThF 1:10–2:30 pm.

5–6 Elementary Harmony (3–3)

Triads, inversions; chord analysis, construction, and progression; part-writing, modulations, figured bass. Prerequisite: Music 1 or satisfactory passing of placement examination. **First Session:** Music 5; **Second Session:** Music 6. MTWThF 4:10–5:30 pm.

299–300 Thesis Research (3–3)

First Session: Music 299. **Second Session:** Music 300. As arranged.

APPLIED MUSIC

Applied Music courses listed below may be repeated for credit. Each course has individual lessons of 45 minutes twice a week; supplementary fee, \$40.

11 Piano (1)

Both sessions: as arranged.

13 Voice (1)

Both sessions: as arranged.

15 Organ (1)

Both sessions: as arranged.

17 Orchestral Instrument (1)

Both sessions: as arranged.

19 Classical Guitar (1)

Both sessions: as arranged.

111 Piano (1)

Both sessions: as arranged.

113 Voice (1)

Both sessions: as arranged.

115 Organ (1)

Both sessions: as arranged.

117 Orchestral Instrument (1)

Both sessions: as arranged.

119 Classical Guitar (1)

Both sessions: as arranged.

Philosophy

R.H. Schlagel, *Chairman*

51-52 Introduction to Philosophy (3-3)

Problems of modern philosophy in relation to scientific and social developments since the Renaissance. *Philosophy 51*: theories of knowledge. *Philosophy 52*: theories of reality. Philosophy 51 or 52 may be taken independently. **First Session**: Philosophy 51; **Second Session**: Philosophy 52. MTWThF 8:10-9:30 am.

131 Ethics (3)

Theories of "the good" and "the right" from Plato to Sartre. **Second Session**: MTWThF 11:10 am-12:30 pm.

172 American Philosophy (3)

Philosophies of Peirce, Royce, James, Dewey, Santayana, and Whitehead as representatives of American thought. **First Session**: MTWThF 9:40-11 am.

196 Language, Thought, and Reality (3)

(Formerly *Philosophy of Language*)

Examination of the relation of language to thought and philosophical problems pertaining to symbolism, meaning, linguistic reference, logical form, and linguistic relativity. Readings from Chomsky, Langer, Wittgenstein, Whorf, etc. **First Session**: MTWThF 11:10 am-12:30 pm.

Physical Education

V.J. DeAngelis, *Chairman*, Department for Men
Loretta Stallings, *Chairman*, Department for Women

The University is not responsible for injuries received in intramural games, or in any of the activities of the departments of Physical Education; and the student assumes full responsibility therefor.

5 Physical Education Activities (1) (men)

Offered with Physical Education 6 (women) in Summer Sessions. Five periods of supervised activity a week. Medical Classification A only. May be repeated for credit not to exceed 4 semester hours. Physical Education fee, \$4.50 a session. **First Session**: Section A (badminton)—MTWThF 8:10-9:10 am; Section B (tennis)—MTWThF 9:40-10:40 am. **Second Session**: Section C (recreational dance)—MTWThF 8:10-9:10 am; Section D (gymnastics)—MTWThF 9:15-10:15 am.

6 Physical Education Activities (1) (women)

Five periods of supervised activity a week. Coeducational classes. Medical Classification A only. May be repeated for credit not to exceed 4 semester hours. Physical Education fee, \$4.50 a session. **First Session**: Section A (badminton)—MTWThF 8:10-9:10 am; Section B (tennis)—

MTWThF 9:40–10:40 am. **Second Session:** Section C (recreational dance)—MTWThF 8:10–9:10 am; Section D (gymnastics)—MTWThF 9:15–10:15 am.

***56 Dance Technique and Theory (1)**

A 3-week course, June 16 to July 3: MTWThF 9:30–11 am. (See Dance Workshop, page 37.)

†101 Physical Education in the Elementary School (3)

For elementary education and physical education majors. Implications of child growth and development for school and playground programs; philosophy, curriculum, techniques of teaching, facilities and equipment, evaluation. A 3-week course, June 17 to July 3. June 17 to June 20: MTWThF 4:10–6 pm; June 23 to July 3: MTWThF 10:10–12 am; conference and field activities as arranged.

***110 Dance Composition II (1)**

A 3-week course, June 16 to July 3: MTWThF 1:10–2:30 pm. (See Dance Workshop, page 37.)

***120 Repertory (1)**

A 3-week course, June 16 to July 3: MTWThF 3–4 pm. (See Dance Workshop, page 37.)

211 Problems and Modern Trends in Physical Education (3)

For experienced teachers. Organization, supervision, and curriculum problems growing out of current issues; program planning policies; competition. A 6-week course, July 7 to August 15: MW 6:10–8 pm; conference as arranged.

†230 Elementary School Physical Education (3)

For elementary education majors and classroom teachers. Current philosophy, trends, and research; their implications for curriculum, instruction, integration of subject matter, and evaluation. A 3-week course, July 7 to 25: MTWThF 10:10–12 am; conference and field activities as arranged.

231 Evaluation in Physical Education (3)

Planning the evaluation program, review of outcomes, analysis of tests and standards, administration and interpretation of tests, guidance. A 6-week course, June 17 to 25: TTh 6:10–8 pm; conference as arranged.

261 Driver and Safety Education I (3)

History, scope, objectives. Automobile construction and maintenance, traffic accidents, laws, regulations, sound driving practices, responsibilities, and liabilities; emphasis on practice driving laboratory experiences. A 6-week course, June 17 to July 25: MW 6:10–8 pm; laboratory as arranged.

262 Driver and Safety Education II (3)

Methods and techniques of conducting programs, pupil and program evaluation, research, planning, organization and instruction in modern

* May be repeated once for credit.

† A course requiring the full daytime attention of enrollees. Concurrent registration for another course scheduled in morning or afternoon not permitted.

approaches, laboratory and direct experiences in the utilization of multiple car and simulator approaches to instruction. **A 6-week course, July 7 to August 15:** TTh 6:10–8 pm; conference as arranged.

***273 Advanced Choreography (3)**

Advanced problems in creative movement and composition. Choreographing of group and solo works in dance. **A 3-week course, June 17 to July 3:** as arranged.

277 Dance Expressions in Selected Cultures (3 or 6)

Study of ethnic forms of dance through reading and participation. Study may be done in the United States or the country of the dance being studied. **A 6-week course, July 7 to August 15:** as arranged.

***297 Advanced Topical Studies (3)**

Individual studies; critique and synthesis of research findings and of literature. Prerequisite: Education 295. **A 6-week course, June 17 to July 25:** Section A (men)—as arranged; **July 7 to August 15:** Section B (women)—as arranged.

Physics

H.H. Hobbs, Chairman

1 General Physics (4)

Topics in classical physics which form a foundation for modern physics. Prerequisite: two years of college preparatory mathematics or concurrent registration for Mathematics 6. Laboratory fee, \$11. **First Session:** Section A—lecture MTTh 1:10–3 pm, recitation WF 8:30–10 am, laboratory MWF 10:10 am–12:30 pm; Section B—lecture MTTh 1:10–3 pm, recitation WF 1:30–3 pm, laboratory MWF 3:10–5:30 pm.

2 General Physics (4)

Electricity, magnetism, and selected topics from modern physics. Prerequisite: Physics 1 or equivalent. Laboratory fee, \$11. **Second Session:** Section A—lecture MTTh 1:10–3 pm, recitation WF 8:30–10 am, laboratory MWF 10:10 am–12:30 pm; Section B—lecture MTTh 1:10–3 pm, recitation WF 1:30–3 pm, laboratory MWF 3:10–5:30 pm.

299–300 Thesis Research (3–3)

Both sessions: as arranged.

Political Science

W.H. Kraus, Chairman

Departmental prerequisite: Political Science 5–6 is prerequisite to all second-group courses in Political Science.

5–6 Introduction to Political Science (3–3)

Political Science 5: structure, powers, and processes of the American political system—Congress, the President, and the Supreme Court; elections,

*May be repeated once for credit.

political parties, and pressure groups; state and local government. *Political Science 6*: nature and study of politics—theories, forms, and processes of political systems; international relations and political ideologies. **First Session:** Political Science 5A—MTWThF 11:10 am–12:30 pm; Political Science 6A—MTWThF 9:40–11 am. **Second Session:** Political Science 5B—MTWThF 9:40–11 am; Political Science 6B—MTWThF 11:10 am–12:30 pm.

101 Far East in the Modern World (3)

First Session: MTWThF 8:10–9:30 am. (See Communist Affairs program, pages 35–37.)

103 Metropolitan Government and Politics (3)

Political changes and processes in metropolitan areas; emphasis on regional and sub-regional governmental institutions. **Second Session:** MTWThF 8:10–9:30 am.

107 Problems in Modern Political Thought (3)

Development of democratic political institutions and analysis of main ideological changes during the 19th and 20th centuries. Emphasis on the rise of socialism and communism. **First Session:** MTWThF 9:40–11 am.

111 Comparative Government and Politics (3)

Introduction to the government and politics of the principal constitutional democracies of Western Europe: Great Britain, France, and the Federal Republic of Germany; secondary reference to other Western European systems and the communist government of East Germany. **Second Session:** MTWThF 6–7:20 pm.

***115 Government and Politics in Eastern Europe (3)**

First Session: MTWThF 11:10 am–12:30 pm. (See Communist Affairs program, pages 35–37.)

118 Political Theory: Nature and Growth of Western Political Thought (3)

Renaissance and Reformation to recent times. Theoretical foundations of the modern state: morals and politics, sovereignty, absolutism, resistance; liberalism, democracy, conservatism. **Second Session:** MTWTh 5:45–7:25 pm.

119 American Political Thought (3)

Introduction to political thought in the United States from colonial times to the present. **First Session:** MTWThF 8:10–9:30 am.

121 U.S. Constitutional Law and Politics (3)

Separation of powers, federal-state relationships, economic regulation. **Second Session:** MTWThF 11:10 am–12:30 pm.

126 The American Presidency (3)

Role of the Presidency in public policy formulation and execution; emphasis on legislative-executive relations. **First Session:** MTWThF 11:10 am–12:30 pm.

* Political Science 112, 115, and 161 are related in their subject matter, and credit for only one of the three may be applied toward a degree.

145 Political Parties and Politics (3)

Organization and operation of political parties in the United States: party system and structure, role of ideology, voting behavior, campaigns and elections, devices for organizing the government. **First Session:** MTWThF 9:40-11 am.

160 Modern Communist Ideologies (3)

Second Session: MTWThF 4:10-5:30 pm. (See Communist Affairs program, pages 35-37.)

***161 Soviet Government and Politics (3)**

First Session: MTWThF 2:10-3:50 pm. (See Communist Affairs program, pages 35-37.)

163 Soviet Foreign Policy (3)

Second Session: MTWThF 6-7:20 pm. (See Communist Affairs program, pages 35-37.)

171 International Politics (3)

International factors, international and domestic environments of foreign policy, global and regional patterns, general characteristics of foreign policy. **Second Session:** MTWThF 1:10-2:30 pm.

177 Governments and Politics in Latin America (3)

Domestic and foreign policy processes and institutions in Latin America; types of government; emphasis on Argentina, Brazil, Chile, Mexico, and Cuba. **Second Session:** MTWThF 11:10 am-12:30 pm.

181 Public International Law and Organization (3)

Survey of public law of nations. Emphasis on law of peace. **First Session:** MTWThF 1:10-2:30 pm.

189 African International Politics (3)

Analysis of interstate relations in Africa and of selected aspects of African relations with the outside world. **First Session:** MTWThF 11:10 am-12:30 pm.

190 Politics of Middle and Southern Africa (3)

Comparative analysis of the political systems of selected countries of non-Mediterranean Africa. **First Session:** MTWThF 2:40-4 pm.

194 Governments of China and Japan (3)

Institutions and processes of government of contemporary China and Japan, with some historical background. Attention to ideological forces. Students cannot receive credit for both Political Science 194 and 162. **First Session:** MTWThF 9:40-11 am.

199 American Government and Politics (3)

Proseminar: reading and research as a basis for analyzing significant problems. Open to seniors in Public Affairs and Political Science curricula. **First Session:** MWF 11:10 am-1 pm.

299-300 Thesis Research (3-3)

Both sessions: as arranged.

* Political Science 112, 115, and 161 are related in their subject matter, and credit for only one of the three may be applied toward a degree.

Psychology

B.I. Levy, *Chairman*

Departmental prerequisite: Psychology 1 or 5-6 is prerequisite to all other courses in Psychology. Six semester hours in first-group Psychology courses are prerequisite to all second-group courses in Psychology. Third-group Psychology courses are open only to graduate students, except by special permission of instructor and Chairman of the Department.

1 General Psychology (3)

Fundamental principles underlying human behavior. **First Session:** Section A—MTWThF 8:10-9:30 am; Section B—MTWTh 7:35-9:15 pm. **Second Session:** Section C—MTWThF 9:40-11 am; Section D—MTWTh 5:45-7:25 pm.

8 Psychology of Motivation and Personality (3)

Introduction to the psychology of personality. Principles of motivation, personality development, social and cultural factors, and assessment and description of personality emphasized. **First Session:** MTWThF 8:10-9:30 am.

22 Introduction to Educational Psychology (3)

Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training. **First 3-Week Education Workshop Session, June 17 to July 3:** Section A—June 17-20, lecture 3:45-5:45 pm, small group discussions—evening; June 23-July 3, lecture 10:10-12 am, conference 9:10-10 am. **Section B—MTWThF 1:10-2:30 pm.**

29 Psychology of Childhood (3)

Developmental approach to study of the child. Emphasis on the socialization process, learning, and the child's view of the world. **First Session:** MTWThF 11:10 am-12:30 pm.

101 Abnormal Psychology (3)

Causes, diagnosis, treatment, and prevention of various types of maladjustments and mental disorders. Prerequisite: 6 semester hours in psychology, or 3 in psychology and 6 in a biological science. **First Session:** Section A—MTWThF 1:10-2:30 pm. **Second Session:** Section B—MTWThF 11:10 am-12:30 pm.

115 Psychology of Language and Communication (3)

Introduction to psycholinguistics and verbal behavior. Information theory, measurement of meaning, cultural and linguistic structures in the perception and learning of language. **First Session:** MTWThF 4:10-5:30 pm.

118 Physiological Psychology (3)

Basic structure and functions of sensory systems, motor systems, central nervous system, autonomic nervous system, and endocrine system, with emphasis on the relations between physiological functioning and behavior. **First Session:** MTWThF 4:10-5:30 pm.

- 121 Psychology of Learning (3)**
Current learning theories and issues. **First Session:** MTWTh 5:45–7:25 pm.
- 129 Motivational Factors in Personality (3)**
Survey of basic principles and assessment techniques, with emphasis on applications to counseling. **Second Session:** MTWTh 7:35–9:15 pm.
- 131 Psychological Tests (3)**
Survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, \$7. **First Session:** MTWThF 4:10–5:30 pm.
- 145 Psychology of Management (3)**
Primarily for students in the schools of Engineering and Applied Science and Government and Business Administration. Introduction to principles of industrial organizations and personnel selection. **First Session:** MWTh 6:10–8 pm.
- 151 Social Psychology (3)**
Social foundations of attitudes and behavior: cognition, motivation, role-behavior, communication, small-group processes, racial attitudes, nationalism, and war. **Second Session:** MTWThF 9:40–11 am.
- 156 Psychology of Attitudes and Public Opinion (3)**
Psychology of opinion formation, measurement of opinion, social determinants of attitudes, psychological processes in propaganda, bases of receptivity of propaganda, psychological warfare. **First Session:** MTWTh 5:45–7:25 pm.
- 191 Independent Research in Psychology (3)**
Opportunity for work on individual library or experimental projects. Open to qualified students by permission; arrangements must be made with the sponsoring faculty member prior to registration. May be repeated once for credit. **First Session:** Section A; **Second Session:** Section B. As arranged.
- 196 History and Systems of Psychology (3)**
Senior capstone course which includes a survey and integration of the major viewpoints and concepts of psychology. Required of psychology majors. **First Session:** MTWThF 11:10 am–12:30 pm.
- 212 Personality Assessment by Projective Techniques (3)**
Emphasis on administration and scoring of the Rorschach Test. Prerequisite: Psychology 211. **Second Session:** MWTh 1:10–3 pm.
- 215 Personality Assessment by Multiple Procedures (3)**
Consideration and use of a wide range of procedures in assessment of personality. Prerequisite: Psychology 211 and 212. **First Session:** MWTh 6:10–8 pm.
- 234 Seminar: Theory of Psychological Measurement (3)**
Development of classical axiomatic-deductive theory underlying major notions in the construction and evaluation of psychological tests. **First Session:** MWTh 6:10–8 pm.

256 Seminar: Psychology of Group Conflict (3)

An attempt to integrate evidence from animal behavior, child behavior, anthropology, psychiatry, and recent history, including World Wars I and II and the present East-West conflict. **Second Session:** MWTh 1:10-3 pm.

283-84 Practicum in Clinical Psychology (3-3)

Supervised practical instruction in agencies doing clinical psychological work. Prerequisite: Psychology 212. Admission by permission of instructor. **First Session:** Psychology 283A and 284A; **Second Session:** Psychology 283B and 284B. As arranged.

295 Independent Research in Psychology (3)

Individual library or experimental research under supervision of staff member. Arrangements must be made with sponsoring faculty member prior to registration. May be repeated once for credit. **First Session:** Section A; **Second Session:** Section B. As arranged.

299-300 Thesis Research (3-3)

Both sessions: as arranged.

Public Administration

K.E. Stromsem, *Chairman*

213 Administration in Government (3)

Critical analysis of federal administrative organizations as an integral part of the political system. Roles of Congress, the Presidency, the Courts, interest groups, political parties, and the public in the administrative process; special attention to centripetal and centrifugal forces. **First Session:** MWF 6:10-8 pm.

221 Management in the Executive Branch (3)

Analysis of application of management theory and practice in the Executive Branch of the Federal Government; emphasis on staff responsibilities and relationships and internal organization and control. **Second Session:** MWF 6:10-8 pm.

251 Governmental Budgeting (3)

Survey of the basic concepts, principles, and practices in governmental budgeting; interrelationship of planning, programming, and budgeting, and their role in the management process. **Second Session:** MWF 8:10-10 pm.

271 Readings and Research in Public Administration (3)

Advanced directed readings and research in specific areas of public administration. **First Session:** as arranged.

299 Thesis Seminar (3)

Examination of thesis standards, research philosophy, and methodology. **First Session:** MWF 8:10-10 pm.

300 Thesis Research (3)

Second Session: as arranged.

Religion

R.G. Jones, *Chairman*

9 The Old Testament (3)

Historical and literary study of the Old Testament with consideration of institutions, outstanding personalities, and the development of religious ideas. **First Session:** MTWThF 9:40-11 am.

10 The New Testament (3)

Study of New Testament literature from the standpoint of occasion, purpose, dominant ideas, and permanent values. Emphasis on approach, structure, and significance of the Gospels and Epistles. **Second Session:** MTWThF 9:40-11 am.

59-60 History of Religions (3-3)

Religion 59: primitive religion and the religions of the East (Hinduism, Buddhism, Taoism, Confucianism, Shinto). *Religion 60:* religions of the West and Near East (ancient religions, Judaism, Christianity, Islam). Origins, evolution, and contemporary status in historical context.

First Session: Religion 59; **Second Session:** Religion 60. MTWThF 11:10 am-12:30 pm.

105 The Life and Thought of Paul (3)

Backgrounds of early Christianity, first-century religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's presentation of the Christian faith. **First Session:** MTWTh 5:45-7:25 pm.

121 Philosophical Problems of Western Religious Thought (3)

Classical and contemporary religious thinkers with reference to the nature of religious truth and experience; the existence, character, and activity of God; and the predicament of man. **Second Session:** MTWThF 1:10-2:30 pm.

160 Buddhism (3)

Origin, development, and contemporary status of Buddhist life and thought; its impact on Asian civilization. **First Session:** MTWTh 5:45-7:25 pm.

172 Religion in American Culture (3)

Growth of religious bodies and institutions in relation to American culture, development of religious thought, and analysis of the contemporary religious scene. **Second Session:** MTWTh 5:45-7:25 pm.

291-92 Readings and Research (3-3)

Investigation of special problems. **First Session:** Religion 291; **Second Session:** Religion 292. As arranged.

299-300 Thesis Research (3-3)

First Session: Religion 299; **Second Session:** Religion 300. As arranged.

Slavic Languages and Literatures

Helen Yakobson, *Chairman*

Placement Examination: a standardized placement examination given before registration is required of all entering students who wish to continue in college the language begun in high school. Upon completion of the examination, assignment is made to the appropriate course, with credit assigned on the usual basis.

1-2 First-year Russian (3-3)

A year course: credit toward a degree at this University given on completion of Slavic 2. Beginners' course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice. Listening comprehension and oral practice in language laboratory. Laboratory fee, \$17.50 a session. **First Session:** Slavic 1; **Second Session:** Slavic 2. Classroom—MTWThF 9:40-11 am, laboratory—MTh 11:10-12 am.

47 Beginning Russian for Reading Examination Candidates (0)

For graduate students with little or no knowledge of Russian who intend to use the language as a research tool. No academic credit. Tuition fee, \$192. **First Session:** MTWTh 5:45-7:25 pm.

49 Russian Readings for Nonmajor Students (3)

Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of instructor. No academic credit for graduate students. Prerequisite: Slavic 4, 8, or 47; or equivalent. **Second Session:** MTWTh 5:45-7:25 pm.

91-92 Introduction to Russian Literature (3-3)

Survey of Russian literature, in translation, from earliest periods through literary masterpieces of the 19th and early 20th centuries. Lecture, recitation, and discussion—in English. **First Session:** Slavic 91; **Second Session:** Slavic 92. MTWTh 7:35-9:15 pm.

Sociology

R.G. Brown, *Chairman*

Departmental prerequisite: Sociology 1 is prerequisite to all second- and third-group courses in Sociology.

1-2 Introductory Sociology (3-3)

Sociology 1: general principles of sociology; development of culture and personality, impact of groups and institutions on man's social behavior. Survey of fields within sociology. **Sociology 2:** Analysis of major social problems confronting the United States; factors producing social problems, their nature and treatment. **First Session:** Sociology 1A and 2A; **Second Session:** Sociology 1B and 2B. MTWThF 9:40-11 am.

61 Development of Social Thought (3)

Examination of concepts and theories relevant to the nature of society and human relationships from ancient writings to the 20th century.
First Session: MTWThF 8:10–9:30 am.

126 Urban Sociology (3)

Place of the city in larger society; growth of the city, problems of urban living, group life, personality, urban housing, city planning, and suburban development. **First Session:** MTWThF 11:10 am–12:30 pm.

129 Race and Minority Groups (3)

Analysis of relationships between dominant and minority groups in society, particularly in the United States; nature and range of problems; analysis of the phenomenon of prejudice. **Second Session:** MTWThF 9:40–11 am.

135 Juvenile Delinquency (3)

Factors producing delinquency, juvenile detention, the juvenile court, training schools, treatment of offenders. **Second Session:** MTWThF 11:10 am–12:30 pm.

147 Organizational Theory and Behavior (3)

(Formerly Sociology of Complex Organizations)

Introductory survey of traditional, contemporary theories and research describing behavior in large, complex organizations and their impact on American social life. **First Session:** MTWThF 1:10–2:30 pm.

149 Modern Sociological Theory (3)

(Formerly Development of Social Theory)

Systematic study of contemporary schools of sociological theory, both European and American development; evaluation of scientific contributions of each school. Prerequisite: Sociology 61 or permission of instructor. **First Session:** MTWThF 1:10–2:30 pm.

191 Current Emphases in Sociology (3)

Analysis and evaluation of recent developments in the general field of sociology and a review and discussion of basic concepts. Required course for all Sociology majors in the senior year. **First Session:** Section A—as arranged. **Second Session:** Section B—MTWThF 11:10 am–12:30 pm.

295 Research (3)

May be repeated once for credit. **First Session:** Section A; **Second Session:** Section B. As arranged.

299–300 Thesis Research (3–3)

First Session: Sociology 299; **Second Session:** Sociology 300. As arranged.

Spanish

Administered by the Department of Romance Languages and Literatures,
J.A. Frey, *Chairman*

Placement Examination: a standardized placement examination given before registration is required of all entering students who wish to continue in college the language begun in high school. Upon completion of the examination, assignment is made to the appropriate course, with credit assigned on the usual basis.

Departmental prerequisite: Spanish 3-4 or 6, or equivalent, is required (Spanish 51-52 is recommended) as prerequisite to all second-group courses in Spanish.

1-2 First-year Spanish (3-3)

A year course: credit toward a degree at this University given on completion of Spanish 2. For beginners. Pronunciation, conversation, grammar, composition, reading of modern Spanish prose. Aural training, oral practice in language laboratory. Laboratory fee, \$17.50 a session.
First Session: Spanish 1; **Second Session:** Spanish 2. Classroom—MTWThF 9:40-11 am, laboratory—MTh 11:10-12 am.

3-4 Second-year Spanish (3-3)

A year course: credit toward a degree at this University given on completion of Spanish 4. Conversation, grammar, composition, reading of modern Spanish prose, introduction to Hispanic civilization. Aural training, oral practice in language laboratory. Laboratory fee, \$17.50 a session. Prerequisite: Spanish 1-2, 2x, or two years of high school Spanish.
First Session: Spanish 3; **Second Session:** Spanish 4. Classroom MTWThF 8:10-9:30 am, laboratory—MTh 9:40-10:30 am.

12 Spanish Conversation and Composition (Intensive) (6)

Intensive, accelerated course which covers material of Spanish 9-10. Two class meetings and one laboratory meeting every day. Laboratory fee, \$25. **First Session:** Classroom—MTWThF 9:40-11 am and MTWThF 1:10-2:30 pm, laboratory—MTWThF 9-9:30 am.

109 Advanced Spanish Conversation and Composition (3)

Emphasis on diction and style. Prerequisite: Spanish 10 or equivalent and permission of instructor. **First Session:** MTWThF 11:10 am-12:30 pm.

130 The Modern Spanish Essay (3)

Development of the Spanish essay from the 16th century; emphasis on the 18th and 19th centuries. Class analysis of texts, collateral reading, and lectures. **Second Session:** MTWThF 1:10-2:30 pm.

131 The Generation of 1898 (3)

Study of the various critical problems related to this renaissance of Spanish letters as a whole, and of its most representative figures and works. **First Session:** MTWThF 9:40-11 am.

145 Panoramic Vision of Mexico (3)

Panoramic vision of Mexico in its cultural, educational, scientific, political, and social aspects. **First Session:** MTWThF 1:10-2:30 pm.

157 Spanish American Literature, 1880-1910 (3)

Lectures, collateral reading, reports, and class analysis of important works.
First Session: MTWThF 9:40-11 am.

201 Grammar, Composition, and Stylistics (3)

For secondary teachers of the Spanish language and graduate students preparing to teach in secondary schools. **Second Session:** MTWThF 4:10-5:30 pm.

223 Seminar: "La Celestina" (3)

For graduate students; open to qualified undergraduates with permission of instructor. **First Session:** MWTh 4:10-6 pm.

299 Thesis Research (3)

First Session: as arranged.

Special Education

Perry Botwin, *Chairman*

SIX-WEEK COURSES—JUNE 17 TO JULY 25

241 Preprofessional Internship: Emotionally Disturbed Children (3)

Practicum experience early in the training sequence; observation of, and interaction with, emotionally disturbed children under the direction of qualified teachers in a field setting and the supervision of the University staff. Admission by permission of instructor. As arranged.

252 Professional Internship: Special Education (3)

Supervised internship in school and/or in clinic settings. Admission by permission of instructor. As arranged.

***260 Characteristics of Children with Crippling or Other Health Impairment (3)**

(Formerly Nature and Needs III: Crippled or Health-impaired Children)

Characteristics of children whose needs must be met in special classroom settings in home, school, and hospital. Principles of learning as they affect the education and diagnosis of these children. Psychological implications of crippling conditions. Prerequisite: Special Education 201 and permission of instructor. MTWThF 10:10-12 am.

†261 Teaching Crippled, Cerebral-palsied, and Other Health-impaired Children (3)

Programs, methods, and materials for teaching children with orthopaedic, cerebral-palsied, and other health-related disorders. Admission by permission of instructor. MTWThF 10:10-12 am.

* Offered as a workshop in conjunction with Special Education 261. Enrollment in both courses required.
 † Offered as a workshop in conjunction with Special Education 260. Enrollment in both courses required.

***280 Characteristics of Children with Learning Disabilities (3)**

Identification of disabilities which may interfere academically, socially, or emotionally with children's normal development. Admission by permission of instructor. MTWThF 8:10-10 am.

†282 Teaching Children with Learning Disabilities (3)

Programs, methods, and materials for the educational needs of children with learning disabilities. Admission by permission of instructor. MTWThF 8:10-10 am.

291 Practicum in Teaching the Emotionally Disturbed (6)

Supervised student teaching in programs for emotionally disturbed children under the direction of a qualified teacher and the supervision of the University staff. Minimum of 150 clock hours required. As arranged.

FIRST 3-WEEK EDUCATION WORKSHOP SESSION—JUNE 17 TO JULY 3

Classes meet Monday through Friday. Each workshop course requires the full day; concurrent registration for another daytime course is not permitted. June 17 to 20—small group discussions, evening; June 23 to July 3—small group discussions and field work, afternoon.

201 Introduction to the Education of Exceptional Children (3)

Survey course to acquaint prospective teachers with the exceptional child and to help them become aware of the various educational modifications necessary to accommodate such children in a school program. June 17 to 20: lecture 3:45-5:45 pm. June 23 to July 3: lecture 8:10-10 am; conference 10:10-11 am.

240 Educational Programming for Children with Behavioral Problems (3)

(Formerly Nature and Needs II: the Emotionally Disturbed)

Analysis of educational provisions for children with behavioral problems through study of ecological considerations in the light of contemporary special education theory. Admission by permission of instructor. June 17 to 20: lecture 3:45-5:45 pm. June 23 to July 3: lecture 8:10-10 am; conference 10:10-11 am.

242 Clinical Teaching of Emotionally Disturbed Children (3)

Lectures and discussions exploring various psychoeducational techniques of teaching emotionally disturbed children and adolescents, interpersonal interaction between teachers and disturbed children, use of group factors in the teaching-learning process, and selection of appropriate teaching methods and materials. Admission by permission of instructor. June 17 to 20: lecture 3:45-5:45 pm. June 23 to July 3: lecture 10:10-12 am; conference 9:10-10 am.

250 Advanced Specialized Teaching Techniques and Materials (3)

Lectures and laboratory practice in specialized techniques and materials for exceptional children. Admission by permission of instructor. June 17 to 20: lecture 3:45-5:45 pm. June 23 to July 3: lecture 8:10-10 am; conference 10:10-11 am.

* Offered as a workshop in conjunction with Special Education 282. Enrollment in both courses required.
† Offered as a workshop in conjunction with Special Education 280. Enrollment in both courses required.

251 Psychosocial Considerations in Special Education (3)

Psychosocial considerations in the education of exceptional children. Admission by permission of instructor. **June 17 to 20:** lecture 3:45-5:45 pm. **June 23 to July 3:** lecture 10:10-12 am; conference 9:10-10 am.

491 Dissertation Research (arr.)

As arranged.

SECOND 3-WEEK EDUCATION WORKSHOP SESSION—JULY 7 TO JULY 25

Classes meet Monday through Friday. Concurrent registration for another day-time course is not permitted, because each workshop course requires the full day—lecture and conference in the morning; small group discussion and field work or laboratory in the afternoon.

202 Nature and Needs of the Mentally Retarded (3)

Nature and needs of children with varying degrees of retardation. Causation and diagnosis of retardation and its psychological and sociological implications as they apply to the child, his parents, and the family constellation. Admission by permission of instructor. **Lecture 10:10-12 am; conference 9:10-10 am.**

303 Administration and Supervision of Special Education (3)

Philosophy and nature of special education; program organization, administration, and development. Surveying local level needs; program evaluation and supervision. Admission by permission of instructor. **Lecture 8:10-10 am; conference 10:10-11 am.**

342 Advanced Seminar: Emotional Disturbance (3)

Concepts in the education of emotionally disturbed children. Admission by permission of instructor. **Lecture 8:10-10 am; conference 10:10-11 am.**

370 Intrapersonal Dynamics in Special Education (3)

Small group exploration of intrapersonal factors essential to understanding roles and interpersonal techniques in teaching exceptional children. Admission by permission of instructor. **Lecture 10:10-12 am; conference 9:10-10 am.**

491 Dissertation Research (arr.)

As arranged.

THIRD 3-WEEK WORKSHOP SESSION—JULY 28 TO AUGUST 15

Classes meet Monday through Friday. Concurrent registration for another day-time course is not permitted, because each workshop course requires the full day—lecture and conference in the morning; small group discussion and field work or laboratory in the afternoon.

203 Teaching Mentally Retarded Children (3)

Educational methods and curricula developed for the mentally retarded at different maturational levels. Organization and planning of instruc-

tional activities; selection and preparation of materials. Admission by permission of instructor. Lecture 10:10-12 am; conference 9:10-10 am.

343 Psychoeducational Diagnosis of Children with Behavior or Learning Difficulties (3)

Laboratory course designed to teach *educational* diagnosis of children who present behavior or learning problems in the schools. Admission by permission of instructor. Lecture 8:10-10 am; conference 10:10-11 am.

350 Diagnostic and Prescriptive Teaching (3)

Theory and practice in diagnostic and prescriptive teaching. Rationale, models, techniques, and problems relevant to implementation. Admission by permission of instructor. Lecture 10:10-12 am; conference 9:10-10 am.

491 Dissertation Research (arr.)

As arranged.

Speech and Drama

G.F. Henigan, *Chairman*

1 Effective Speaking (3)

Preparation and delivery of extempore speeches, developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, \$2. **First Session:** Section A—MTWThF 1:10-2:30 pm; Section B—MTWTh 5:45-7:25 pm. **Second Session:** Section C—MTWThF 11:10 am-12:30 pm.

11 Voice and Diction (3)

Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to study of sounds of English, standards of speech. Class instruction in problems of rate, volume, pitch, quality. Recording fee, \$4. **First Session:** Section A; **Second Session:** Section B. MTWThF 9:40-11 am.

32 Oral Reading (3)

Reading to others, theory and practice in problems of interpreting the printed page. Prerequisite: Speech and Drama 11. Recording fee, \$2. **First Session:** MTWThF 11:10 am-12:30 pm.

121 Group Discussion and Conference Leadership (3)

Process of thinking and problem solving in committees and small groups; methods of leading discussions and conferences. Prerequisite: 6 hours of speech or permission of instructor. **First Session:** MTWThF 8:10-9:30 am.

155 Play Production Practice (1)

Practical work in theater. Admission by permission of instructor. **First Session:** as arranged.

157 Workshop in Producing Shakespeare (2)

June 16 to August 29. (See Workshop in Producing Shakespeare, page 38.)

169 Creative Dramatics (3)

Study of creative dramatics and its use as a learning tool. **First Session:** MTWThF 1:10-2:30 pm.

183 Clinical Procedures in Speech and Hearing (1)

Method, theory, and practice in preparation of therapeutic objectives and materials; practice and observation in speech and hearing evaluation. May be repeated for a total of 3 semester hours. Prerequisite: Speech and Drama 172 or 182. **First Session:** Section A; **Second Session:** Section B. As arranged.

184 Clinical Practice in Speech and Hearing (1)

Supervised case work in speech and hearing—the University Speech and Hearing Clinic and selected off-campus facilities. May be repeated for a total of 3 semester hours. Prerequisite or concurrent registration: Speech and Drama 183. **First Session:** Section A; **Second Session:** Section B. As arranged.

277 Advanced Clinical Procedures in Speech and Hearing (arr.)

First Session: Section A; **Second Session:** Section B. As arranged.

278 Advanced Clinical Practice in Speech and Hearing (arr.)

First Session: Section A; **Second Session:** Section B. As arranged.

291 Seminar: Speech Pathology (3)

Offered in such areas as articulatory problems and delayed speech, aphasia, voice difficulties and cleft palate, stuttering, cerebral palsy, and allied disorders. May be repeated for credit. **First Session:** as arranged.

292 Seminar: Audiology (3)

Offered in such areas as theories of audition, special auditory tests, aural rehabilitation, psychoacoustics. May be repeated for credit. **Second Session:** as arranged.

294 Independent Research in Dramatic Art (arr.)

May be repeated for credit. **First Session:** as arranged.

295 Independent Research in Speech and Hearing (arr.)

May be repeated for credit. **First Session:** Section A; **Second Session:** Section B. As arranged.

299-300 Thesis Research (3-3)

First Session: Speech and Drama 299; **Second Session:** Speech and Drama 300. As arranged.

Statistics

Solomon Kullback, *Chairman*

Departmental prerequisite: one entrance unit in algebra is prerequisite to all first-group courses in Statistics.

Statistics 51, 53, and 91 are related in their subject matter, and credit hours for only one of the three may be applied toward a degree. Statistics 52 lies outside

of this group, and may be taken for degree credit in combination with any one of the other three.

49 The Language of Statistics (0)

For doctoral students as a minimum option in lieu of a foreign language. No academic credit. Tuition fee, \$256. An 8-week course, June 17 to August 8: MWF 3-5 pm.

51 Introduction to Business and Economic Statistics (3)

Elementary principles for analyzing and interpreting statistical data; frequency distributions, descriptive measures, sampling, estimation, tests of hypotheses, correlation, time series, index numbers. Laboratory fee, \$9. **First Session:** lecture MWF 9:40-11 am, laboratory TTh 9:40-11 am and 1 hour to be arranged.

53 Introduction to Statistics in Psychology and Education (3)

Frequency distributions, descriptive measures, probability, sampling, estimation, tests of hypotheses, correlation, analysis of variance. Laboratory fee, \$9. **Second Session:** lecture MWF 9:40-11 am, laboratory TTh 9:40-11 am and 1 hour to be arranged.

91 Principles of Statistical Methods (3)

Variables and attributes, averages and dispersion, frequency distributions and their characteristics, regression and correlation, statistical decision processes. Laboratory fee, \$9. **First Session:** lecture MWF 1:10-2:30 pm, laboratory TTh 1:10-2:30 pm and 1 hour to be arranged.

97 Introduction to Computer Programming (3)

Computer and programming concepts. High-level language programs written by students will be run on the University computer. Laboratory fee, \$20. **First Session:** lecture MWF 6-7:20 pm, laboratory TTh 6-7:20 pm.

***104 Statistics in the Behavioral Sciences and Education I (3)**

Introductory study of statistical techniques for research problems in behavioral sciences and education. Laboratory fee, \$9. An 8-week course, June 17 to August 8: lecture MW 1:10-2:50 pm, laboratory F 1:10-2:50 pm.

107 Statistics for Engineers (3)

Probability models, discrete and continuous distributions, sampling, hypothesis testing and estimation, engineering applications. Prerequisite: differential and integral calculus. An 8-week course, June 17 to August 8: MW 5:45-8:15 pm.

118 Regression Analysis (3)

Regression and correlation theory: simple, partial, and multiple. Prerequisite: 3 semester hours selected from Statistics 51, 53, 91, 104, 107. Laboratory fee, \$9. **First Session:** lecture MWF 3:40-5 pm, laboratory TTh 3:40-5 pm and 1 hour to be arranged.

119 Bases of Statistical Decision Making (3)

For students in the Navy Graduate Financial Management Program only. Introduction to techniques of decision making, with emphasis on applica-

* May not be taken for credit by students who have received credit for Statistics 51, 53, or 91.

tions rather than theory. Includes: binomial distribution, normal distribution, Type I and II errors, estimation, research methodology, and problems of inference. **June 11 to July 31:** lecture TTh 9:40–11:20 am, laboratory TTh 8:10–9:30 am.

131 Contingency Table Techniques (3)

Analysis of categorical data. Tests of independence, homogeneity, and interaction in simple and complex contingency tables. Tests of goodness of fit and of Markovity. Prerequisite: Statistics 105 or 118, or permission of instructor. **An 8-week course, June 17 to August 8:** TTh 3–5:30 pm.

155 Introduction to Probability (3)

Probability distributions, Bayes' theorem and postulate, Bernoulli's theorem and its experimental verification, mathematical expectation, laws of large numbers. Prerequisite: one entrance unit in algebra. **First Session:** MWF 5:30–8 pm.

231 Contingency Table Analysis (3)

A study of the theoretical bases underlying the analysis of categorical data. Prerequisite: Statistics 201–2 or 257–58. **An 8-week course, June 17 to August 8:** TTh 3–5:30 pm.

298 Seminar: Combinatorial Probability (3)

An 8-week course, June 17 to August 8: MW 4:10–6 pm.

299–300 Thesis Research (3–3)

First Session: Statistics 299; **Second Session:** Statistics 300. As arranged.

HOURLY SCHEDULE*

FIRST SESSION, JUNE 16 TO JULY 23

MORNING CLASSES

| 8:10 | 9:00 | 9:40 |
|-------------------------------------|------------------------------|-------------------------------|
| Art 108 (to 9:30) | Art 180 (to 12) | P Sc 6A (to 11) |
| Chem 11 (MWF to 1; TTh to 11:10) | Art 189 (to 12) | P Sc 107 (to 11) |
| Chem 22 (to 12:30) | Art 190 (to 12) | P Sc 145 (to 11) |
| Chem 51 (to 9:40) | Art 279 (to 12) | P Sc 194 (to 11) |
| Clas 1 (to 9:30) | Art 280 (to 12) | Rel 9 (to 11) |
| Fren 3 lect (to 9:30) | Art 281 (to 12) | Slav 1 lect (to 11) |
| Hist 39 (to 9:30) | Chin 5 lect (to 11:45) | Soc 1A (to 11) |
| Math 9A (to 9:30) | Fren 12 lab (to 9:30) | Soc 2A (to 11) |
| Phil 51 (to 9:30) | Span 12 lab (to 9:30) | Span 1 lect (to 11) |
| PE 5A (to 9:10) | | Span 3 lab (MTh to 10:30) |
| PE 6A (to 9:10) | 9:10 | †Span 12 lect (to 11) |
| P Sc 101 (to 9:30) | Econ 218 (TThF to 11) | Span 131 (to 11) |
| P Sc 119 (to 9:30) | | Span 157 (to 11) |
| Psyc 1A (to 9:30) | 9:40 | Sp&D 11A (to 11) |
| Psyc 8 (to 9:30) | | Stat 51 lect (MWF to 11) |
| Soc 61 (to 9:30) | | Stat 51 lab (TTh to 11) |
| Span 3 lect (to 9:30) | | |
| Sp&D 121 (to 9:30) | AmCv 175 (to 11) | 9:50 |
| | Anth 1 (to 11) | Chem 53 (MWF to 1) |
| 8:30 | Art 31 (to 11) | |
| Phys 1A rec (WF to 10) | Art 114 (to 11) | 10:10 |
| | B Sc 1A (to 1) | B&PA 201A (MWF to 12) |
| 9:00 | B Ad 51 (to 11) | Phys 1A lab (MWF to 12:30) |
| Art 41A (to 12) | Econ 1A (to 11) | |
| Art 42A (to 12) | Engl 71 (to 11) | 11:10 |
| Art 61 (to 12) | Engl 165 (to 11) | Acct 1A (to 12:30) |
| Art 65A (to 12) | Fren 1 lect (to 11) | Art 112 (to 12:30) |
| Art 66A (to 12) | Fren 3 lab (MTh to 10:30) | Clas 113 (to 12:30) |
| Art 81 (to 12) | †Fren 12 lect (to 11) | Econ 102 (to 12:30) |
| Art 82 (to 12) | Geog 51 (to 11) | Econ 181 (to 12:30) |
| Art 139 (to 12) | Geog 151 (to 11) | Engl 1 (to 12:30) |
| Art 143 (to 12) | Geol 1 (MTWTh to 1) | Engl 176 (to 12:30) |
| Art 157A (to 12) | Hist 71A (to 11) | Fren 1 lab (MTh to 12) |
| Art 158 (to 12) | Hist 175 (to 11) | Fren 109 (to 12:30) |
| Art 164A (to 12) | Math 15 (to 11) | Fren 201 (to 12:30) |
| Art 164B (to 12) | Math 139 (to 11) | |
| Art 179 (to 12) | Mus 106 (to 11) | |
| | Phil 172 (to 11) | |
| | PE 5B (to 10:40) | |
| | PE 6B (to 10:40) | |

* Classes meet Monday through Friday unless otherwise indicated. Seminars and research courses for which hours are to be arranged, and courses in the School of Education will be found under the departmental announcements.

† Five classroom meetings 9:40-11 am; five classroom meetings 1:10-2:30 pm.

MORNING CLASSES (Continued)

| 11:10 | 11:10 | 11:10 |
|---------------------|---------------------|------------------------|
| Geog 52 (to 12:30) | P Sc 115 (to 12:30) | Slav 1 lab (MTh to 12) |
| Hist 40A (to 12:30) | P Sc 126 (to 12:30) | Soc 126 (to 12:30) |
| Hist 275 (MWF to 1) | P Sc 189 (to 12:30) | Span 1 lab (MTh to 12) |
| Math 21A (to 12:30) | P Sc 199 (MWF to 1) | Span 109 (to 12:30) |
| Mus 4A (to 12:30) | Psyc 29 (to 12:30) | Sp&D 32 (to 12:30) |
| Phil 196 (to 12:30) | Psyc 196 (to 12:30) | |
| P Sc 5A (to 12:30) | Rel 59 (to 12:30) | |

AFTERNOON CLASSES

| 12:45 | 1:10 | 2:40 |
|-------------------------|----------------------------|---------------------------|
| Chin 5 tutor (to 1:35) | Hist 291 (TTh to 4) | P Sc 190 (to 4) |
| 1:00 | Math 23 (to 2:30) | |
| Art 21A (to 4) | Phys 1A lect (MTTh to 3) | 3:00 |
| Art 22A (to 4) | Phys 1B lect (MTTh to 3) | |
| Art 41B (to 4) | P Sc 181 (to 2:30) | +Stat 49 (MWF to 5) |
| Art 42B (to 4) | Psyc 101A (to 2:30) | +Stat 131 (TTh to 5:30) |
| Art 51A (to 4) | Soc 147 (to 2:30) | +Stat 231 (TTh to 5:30) |
| Art 52A (to 4) | Soc 149 (to 2:30) | |
| Art 125A (to 4) | *Span 12 lect (to 2:30) | 3:10 |
| Art 126A (to 4) | Span 145 (to 2:30) | |
| Art 127A (to 4) | Sp&D 1A (to 2:30) | +E Ad 115 (MW to 5:40) |
| Art 128A (to 4) | Sp&D 169 (to 2:30) | +E Ad 212 MW to 5:40) |
| Art 131A (to 4) | Stat 91 lect (MWF to 2:30) | Phys 1B lab (MWF to 5:30) |
| Art 132A (to 4) | Stat 91 lab (TTh to 2:30) | |
| Art 137 (to 4) | +Stat 104 lect MW to 2:50) | 3:40 |
| Art 144 (to 4) | +Stat 104 lab (F to 2:50) | |
| Art 163 (to 4) | | Stat 118 lect (MWF to 5) |
| Art 171A (to 4) | 1:30 | Stat 118 lab (TTh to 5) |
| Art 265A (to 4) | Phys 1B rec (WF to 3) | |
| Art 266A (to 4) | | 4:10 |
| Art 275 (to 4) | | |
| 1:10 | | |
| AmCv 176 (to 2:30) | 1:45 | Art 105 (to 5:30) |
| Art 1 (to 2:30) | | B Ad 118 (to 5:30) |
| Art 118 (to 2:30) | Chin 5 lab (to 2:35) | B&PA 203A (MWF to 6) |
| Art 246 (to 2:30) | | +EE 153 (MW to 6:40) |
| B Sc 148 (to 4:30) | 2:10 | +EE 154 (TTh to 6:40) |
| Engl 121 (to 2:30) | | +EE 241 (MW to 6:40) |
| *Fren 12 lect (to 2:30) | B Ad 281 (MWF to 4) | +EE 242 (TTh to 6:40) |
| Fren 91 (to 2:30) | P Sc 161 (to 3:50) | |
| Hist 182 (to 2:30) | | |

* Five classroom meetings 9:40-11 am; 5 classroom meetings 1:10-2:30 pm.
 † June 17 to August 8.

AFTERNOON CLASSES (Continued)

| 4:10 | 4:10 | 5:00 |
|--------------------|----------------------|---------------------------|
| Engl 135 (to 5:30) | Psyc 115 (to 5:30) | Germ 1M lab (MTh to 5:50) |
| Fren 129 (to 5:30) | Psyc 118 (to 5:30) | Germ 3M lab (MTh to 5:50) |
| Hist 188 (to 5:30) | Psyc 131 (to 5:30) | |
| Hist 194 (to 5:30) | Span 223 (MWTh to 6) | |
| Mus 5 (to 5:30) | *Stat 298 (MW to 6) | |

EVENING CLASSES

| 5:30 | 6:00 | 6:30 |
|--------------------------|----------------------------|---------------------------|
| Stat 155 (MWF to 8) | Acct 121 (to 7:20) | †Art 42C (MTWTh to 9:30) |
| | Acct 193 (to 7:20) | †Art 51B (MTWTh to 9:30) |
| 5:45 | B Sc 1B (to 9:20) | †Art 52B (MTWTh to 9:30) |
| | B Sc 115 (to 9:20) | †Art 65B (MTWTh to 9:30) |
| Art 71 (MTWTh to 7:25) | Engl A (to 7:20) | †Art 66B (MTWTh to 9:30) |
| B Ad 141 (MTWTh to 7:25) | Fren 49 (to 7:20) | †Art 125B (MTWTh to 9:30) |
| Econ 1B (MTWTh to 7:25) | Germ 1 lect (to 7:20) | †Art 126B (MTWTh to 9:30) |
| Engl 161 (MTWTh to 7:25) | Hist 72A (to 7:20) | †Art 127B (MTWTh to 9:30) |
| Engl 164 (MTWTh to 7:25) | Hist 150 (to 7:20) | †Art 128B (MTWTh to 9:30) |
| Germ 47A (MTWTh to 7:25) | Math 3 (to 7:20) | †Art 131B (MTWTh to 9:30) |
| Mus 3A (MTWTh to 7:25) | Math 22A (to 7:20) | †Art 132B (MTWTh to 9:30) |
| Psyc 121 (MTWTh to 7:25) | Math 113 (to 7:20) | †Art 159 (MTWTh to 9:30) |
| Psyc 156 (MTWTh to 7:25) | Math 270 (to 7:20) | †Art 160 (MTWTh to 9:30) |
| Rel 105 (MTWTh to 7:25) | Stat 97 lect (MWF to 7:20) | †Art 171B (MTWTh to 9:30) |
| Rel 160 (MTWTh to 7:25) | Stat 97 lab (TTh to 7:20) | †Art 172 (MTWTh to 9:30) |
| Slav 47 (MTWTh to 7:25) | | †Art 265B (MTWTh to 9:30) |
| Sp&D 1B (MTWTh to 7:25) | 6:10 | †Art 266B (MTWTh to 9:30) |
| *Stat 107 (MW to 8:15) | *Ap S 59 (MW to 9:30) | Germ 3N lab (MTh to 7:20) |
| | *Ap S 113 (TTh to 8:40) | |
| | *Ap S 211 (MW to 8:40) | |
| | B Ad 284 (MWF to 8) | |
| | B Ad 298 (MWTh to 8) | |
| | B&PA 207A (MWF to 8) | |
| | B&PA 221 (MWF to 8) | |
| | Econ 217 (MWTh to 8) | |
| | *E Ad 255 (TTh to 8:40) | |
| | *E Ad 269 (MW to 8:40) | |
| | Hist 387 (MWF to 8) | |
| | *ME 131 (TTh to 8:40) | |
| | Psyc 145 (MWTh to 8) | |
| | Psyc 215 (MWTh to 8) | |
| | Psyc 234 (MWTh to 8) | |
| | P Ad 213 (MWF to 8) | |
| 6:00 | 6:30 | 7:30 |
| Acct 1B (to 7:20) | †Art 41C (MTWTh to 9:30) | Germ 1N lab (MTh to 8:20) |
| Acct 115A (MWF to 8:25) | | |

* June 17 to August 8.
† Laboratory as arranged.

EVENING CLASSES (Continued)

| 7:35 | 7:35 | 8:10 |
|--------------------------|--------------------------|------------------------|
| Art 149 (MTWTh to 9:15) | Germ 47B (MTWTh to 9:15) | Acct 215A (MWF to 10) |
| B Ad 105 (MTWTh to 9:15) | Math 111 (to 8:55) | Acct 275 (MWF to 10) |
| B Ad 161 (MTWTh to 9:15) | Math 122 (to 8:55) | Acct 299 (MWF to 10) |
| Engl B (to 8:55) | Math 284 (to 8:55) | B Ad 241 (MWF to 10) |
| Engl 51 (MTWTh to 9:15) | Psyc 1B (MTWTh to 9:15) | B Ad 257 (MTWTh to 10) |
| Germ 3 lect (to 8:55) | Slav 91 (MTWTh to 9:15) | B Ad 299 (MWF to 10) |
| | | B&PA 201B (MWF to 10) |
| | | P Ad 299 (MWF to 10) |

SECOND SESSION, JULY 24 TO AUGUST 29

MORNING CLASSES

| 8:10 | 9:40 | 9:50 |
|----------------------------------|---------------------------|----------------------------|
| Chem 12 (MWF to 1; TTh to 11:10) | Anth 2 (to 11) | Chem 54 (MWF to 1) |
| Chem 52 (to 9:40) | Art 32 (to 11) | |
| Clas 2 (to 9:30) | Art 72 (to 11) | 10:10 |
| Econ 101 (to 9:30) | B Sc 2A (to 1) | B&PA 203B (MWF to 12) |
| Fren 4 lect (to 9:30) | B Sc 127 lect (to 11) | Phys 2A lab (MWF to 12:30) |
| Hist 40B (to 9:30) | B Ad 131 (to 11) | |
| Hist 185 (to 9:30) | Econ 2A (to 11) | 11:10 |
| Math 10 (to 9:30) | Engl 2 (to 11) | Acct 2A (to 12:30) |
| Phil 52 (to 9:30) | Engl 72 (to 11) | Anth 155 (to 12:30) |
| PE 5C (to 9:10) | Fren 2 lect (to 11) | Art 113 (to 12:30) |
| PE 6C (to 9:10) | Fren 4 lab (MTh to 10:30) | B Sc 127 lab (MWF to 1) |
| P Sc 103 (to 9:30) | Geol 2 (MTWTh to 1) | B Ad 191 (to 12:30) |
| Span 4 lect (to 9:30) | Hist 72B (to 11) | Clas 108 (to 12:30) |
| | Math 16 (to 11) | Econ 182 (to 12:30) |
| 8:30 | Math 140 (to 11) | Engl 40 (to 12:30) |
| Phys 2A rec (WF to 10) | P Sc 5B (to 11) | Fren 2 lab (MTh to 12) |
| | Psyc 1C (to 11) | Fren 110 (to 12:30) |
| 9:00 | Psyc 151 (to 11) | Math 22B (to 12:30) |
| Art 153 (to 12) | Rel 10 (to 11) | Mus 3B (to 12:30) |
| Chin 6 lect (to 11:45) | Slav 2 lect (to 11) | Phil 131 (to 12:30) |
| | Soc 1B (to 11) | P Sc 6B (to 12:30) |
| 9:15 | Soc 2B (to 11) | P Sc 121 (to 12:30) |
| PE 5D (to 10:15) | Soc 129 (to 11) | P Sc 177 (to 12:30) |
| PE 6D (to 10:15) | Span 2 lect (to 11) | Psyc 101B (to 12:30) |
| | Span 4 lab (MTh to 10:30) | Rel 60 (to 12:30) |
| | Sp&D 11B (to 11) | Slav 2 lab (MTh to 12) |
| | Stat 53 lect (MWF to 11) | Soc 135 (to 12:30) |
| | Stat 53 lab (TTh to 11) | Soc 191B (to 12:30) |
| | | Span 2 lab (MTh to 12) |
| | | Sp&D 1C (to 12:30) |

AFTERNOON CLASSES

| 12:45 | 1:30 | 4:10 |
|--|---------------------------|--|
| Chin 6 tutor (to 1:35) | Phys 2B rec (WF to 3) | Art 141 (to 5:30) B Ad 231 (MWF to 6) B&PA 204 (MWF to 6) |
| 1:00 | 1:45 | Engl 136 (to 5:30) Fren 256 (to 5:30) Hist 187 (to 5:30) Math 9B (to 5:30) Mus 6 (to 5:30) P Sc 160 (to 5:30) Span 201 (to 5:30) |
| Art 157B (to 4) | Chin 6 lab (to 2:35) | |
| 1:10 | 2:10 | |
| B Ad 102 (to 2:30) Econ 1C (to 2:30) Engl 170 (to 2:30) Geol 103 (MTWTh to 2:50) Math 24 (to 2:30) Mus 1 (to 2:30) Phys 2A lect (MTTh to 3) Phys 2B lect (MTTh to 3) P Sc 171 (to 2:30) Psyc 22B (to 2:30) Psyc 212 (MWTh to 3) Psyc 256 (MWTh to 3) Rel 121 (to 2:30) Span 130 (to 2:30) | Hist 372 (TTh to 5) | |
| | 3:10 | 5:00 |
| | Phys 2B lab (MWF to 5:30) | Germ 2M lab (MTh to 5:50) Germ 4M lab (MTh to 5:50) |

EVENING CLASSES

| 5:35 | 5:45 | 6:00 |
|--|---|---|
| Acct 115C (MWF to 8) | Mus 4B (MTWTh to 7:25) P Sc 118 (MTWTh to 7:25) Psyc 1D (MTWTh to 7:25) Rel 172 (MTWTh to 7:25) Slav 49 (MTWTh to 7:25) | B Sc 145 (to 8:50) Germ 2 lect (to 7:20) Hist 71B (to 7:20) Math 6 (to 7:20) Math 21B (to 7:20) Math 107 (to 7:20) Math 157 (to 7:20) P Sc 111 (to 7:20) P Sc 163 (to 7:20) |
| 5:45 | 6:00 | 6:10 |
| Art 21B (MTWTh to 7:25) B Ad 176 (MTWTh to 7:25) Econ 2B (MTWTh to 7:25) Econ 121 (MTWTh to 7:25) Engl 162 (MTWTh to 7:25) Germ 49A (MTWTh to 7:25) | Acct 2B (to 7:20) Acct 122 (to 7:20) B Sc 2B (to 9:20) | Acct 215B (MWF to 8) B&PA 201C (MWF to 8) B&PA 211 (MWTh to 8) B&PA 218 (MWF to 8) |

EVENING CLASSES (Continued)

| 6:10 | 7:35 | 8:10 |
|---------------------------|--------------------------|-----------------------|
| Engl 278 (MWTh to 8) | Art 22B (MTWTh to 9:15) | B Ad 209 (MWF to 10) |
| Hist 396 (MWF to 8) | B Ad 162 (MTWTh to 9:15) | B Ad 237 (MWF to 10) |
| P Ad 221 (MWF to 8) | Engl 52 (MTWTh to 9:15) | B&PA 207B (MWF to 10) |
| 6:30 | Germ 4 lect (to 8:55) | B&PA 222 (MWF to 10) |
| Germ 4N lab (MTh to 7:20) | Germ 49B (MTWTh to 9:15) | P Ad 251 (MWF to 10) |
| 7:30 | Math 112 (to 8:55) | |
| | Math 124 (to 8:55) | |
| | Psyc 129 (MTWTh to 9:15) | |
| Germ 2N lab (MTh to 8:20) | Slav 92 (MTWTh to 9:15) | |

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Requests for the following publications must include zip code and should be addressed as indicated.

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SUMMER SESSIONS, Dean of the Summer Sessions

SCHEDULE OF CLASSES: FALL AND SPRING SEMESTERS, Registrar

SCHEDULE OF CLASSES: SUMMER SESSIONS, Dean of the Summer Sessions

INDEX

A

- Academic credit, 18
- Academic status of the University, 8
- Academic work load, 18
- Accident insurance, 20
- Accounting courses, 41-42
- Accreditation, 8
- Administration, officers of, 11-12
- Admission, 13-15
- Alumni career services, 23
- American Studies program, 34-35
- American Civilization courses, 42
- Annual issues of the University Bulletin, 97
- Anthropology courses, 42
- Application forms, 14
- Applied Science courses, 59
- Art courses, 43-46

B

- Biological Sciences courses, 46-47
- Board of Trustees, 10-11
- Business Administration courses, 47-49
- Business and Public Administration courses, 49-50

C

- Calendar for summer 1969, 5-6
- Career services, student and alumni, 23
- Changes in program of study, 16
- Chemistry courses, 50-51
- Chinese course, 51
- Civil Engineering courses, 59
- Classics courses, 51
- Colleges, schools, and divisions, 24-33
- Columbian College of Arts and Sciences, 24-25
- Communist Affairs program, 35-37
- Consortium of Universities of the Washington Metropolitan Area, Inc., 9-10
- Consortium registration, 16
- Continuing legal education, 28
- Course numbers, explanation of, 40
- Courses of instruction, 40-91
- Credit:
 - Academic, 18
 - Explanation of amount of, 41

D

- Dance workshop, 37
- Degree candidacy, admission to, 13-14, 14-15
- Degree programs, off-campus, 32-33
- Degrees offered by:
 - Columbian College of Arts and Sciences, 24
 - Education, School of, 30
 - Engineering and Applied Science, School of, 28
 - Government and Business Administration, School of, 31
 - Degrees offered by (cont'd):
 - Graduate School of Arts and Sciences, 26
 - National Law Center, 27
 - Public and International Affairs, School of, 32
- Dismissal of students, 18
- Dormitory, 22
- Drama courses, 88, 89

E

Economics courses, 52
 Education courses, 53-59
 Education, School of, 30-31
 Educational facilities of the University, 9
 Electrical Engineering courses, 59-60
 Employment, student, 23
 Engineering Administration courses, 60-61
 Engineering and Applied Science, School of, 28-30
 Engineering courses, 59-61
 Engineering Mechanics courses, 61

English courses, 62-63
 Entrance requirements, 24-25, 26, 27-28, 29-30, 30-31, 31-32, 32, 33
 Examinations:
 College Entrance Board, 15, 25, 29
 For admission, 25, 29
 Graduate Record, 15, 30, 31, 31-32
 Graduate Study in Business, 15, 31-32
 Miller Analogies Test, 15, 30, 31
 National teacher, 6, 17
 New York Bar, 16

F

Fees and financial regulations, 16-18
 Residence hall rates, 22

French courses, 64-65

G

General Studies, College of, 32-33
 Geography courses, 65
 Geology courses, 66
 Germanic Languages and Literatures courses, 66-67

Government and Business Administration, School of, 31-32
 Graduate School of Arts and Sciences, 26-27

H

Health and accident insurance, 20
 Health Care Administration courses, 67
 Health services, student, 19-20
 History courses, 67-69
 History of the University, 7-8

Honorary Trustees, 11
 Honors program, secondary schools, 38-39
 Hourly schedule, 92-97

I

Institute for Sino-Soviet Studies, 35-37
 Institutes in Mathematics, 39

Insurance, health and accident, 20

L

Language study in Paris, 37-38
 Latin courses, 51
 Law
 SEE National Law Center

Library, 9
 Lost and found office, 18

M

Mathematics courses, 69-71
 Mathematics, summer institutes in, 39

Mechanical Engineering courses, 61
 Music courses, 71-72

N

National Law Center, 27-28

Nondegree status, admission to, 13, 14

P

- Paris, language study in, 37-38
- Payment of fees, 17
- Philosophy courses, 73
- Physical Education courses, 73-75
- Physics courses, 75
- Policy on release of student information, 18-19
- Political Science courses, 75-77
- Program of study, changes in, 16
- Psychological Clinic, 21
- Psychology courses, 78-80
- Public Administration courses, 80
- Public and International Affairs, School of, 32

R

- Reading Center, 20-21
- Readmission, 13-14
- Recreational program, 23
- Refunds, 17-18
- Regional Science courses, 65
- Registration, 15-16
- Regulations, 18-19
- Release of student information, policy on, 18-19
- Religion courses, 81
- Research facilities of Washington, 9
- Residence, 18
- Residence hall, 22
- Rules, right to change, 18
- Russian courses, 82

S

- Schedule, hourly, 92-97
- Secondary school honors program, 38-39
- Semester hours of credit, 41
- Shakespeare, workshop in producing, 38
- Sino-Soviet Studies, Institute for, 35-37
- Slavic Languages and Literatures courses, 82
- Social program, 23
- Sociology courses, 82-83
- Spanish courses, 84-85
- Special Education courses, 85-88
- Special programs and workshops, 34-39
- Speech courses, 88-89
- Speech and Hearing Clinic, 21
- Statistics courses, 89-91
- Student:
 - Career services, 23
 - Services and activities, 19-23
 - Union, 22

T

- Trustees, Board of, 10-11
- Tuition, 16

U

- University Students, Division of, 33

V

- Veterans education, 21-22

W

- Withdrawal, 17, 17-18
- Work load, academic, 18
- Workshops, 37, 38

Z

- Zoology courses, 47

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THE GEORGE WASHINGTON UNIVERSITY BULLETIN

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I

1968-1969

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1968-1969

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French Language and Literature
- Melva Rose Madison, District of Columbia
Sociology
- Mark Claster Mamolen, Maryland
Economics
- Robert Nelson Matlock, Virginia
Political Science
- Ann McGovern Mead, Maryland
History
- Robert Roy Michael, Maryland
Political Science
- Kathleen Patricia Modry, District of Columbia
American Thought and Civilization
- Joanne Marie Moran, Rhode Island
Social Sciences
- Grant Edward Morris, District of Columbia
American Thought and Civilization
- Bernard Emilio Nunez III, District of Columbia
Psychology
- Lydia Benedict Owens, Virginia
Sociology
- Linda Ellen Pearlstein, Tennessee
Philosophy
- Anson Perina, Jr., New Jersey
History
- Anne Tannahill Phillips, Maryland
Art History and Theory
- Betty Jane Phillips, Virginia
Political Science
- Lynn Ellen Price, District of Columbia
Art History and Theory
- Albert Russell Pytko, Virginia
Social Sciences

Thomas Joseph Quarton, California
Social Sciences
Marie Madeleine Monique Ravelli,
Virginia
Art History and Theory
Harold Joseph Resweber, Jr., Louisiana
Political Science
Ann Rosenberg, New Jersey
Sociology
Salma Camille Saour, Virginia
Speech Pathology and Audiology
Maria Barbara Sardella, Pennsylvania
Art History and Theory
Robert McQuain Seaton, Virginia
Social Sciences
Raphaelle Jeanne Semmes, Virginia
Anthropology
Karen Lynn Shachian, New Jersey
Psychology
Karen Nina Simon, New Jersey
French Language and Literature
David Allen Sokolec, Illinois
English Literature
Kenneth Winston Starr, Texas
Political Science
Jean Leslie Stein, District of Columbia
English Literature
John Herbert Strandquist, California
Social Sciences

Larry Alan Tabick, New York
History
Joseph Brooks Townsend, Alabama
Social Sciences
Elizabeth Woodruff Van Cise, New York
Sociology
Leo Martin Seymour van den Blink,
Maryland
Political Science
William Harold Vindal, Virginia
Sociology
Deborah McClintock Vitek, District of
Columbia
Latin
Frank Talman Watrous III, Virginia
Psychology
Charles Austin Wheeler, Puerto Rico
Economics
Joyce Harting White, Maryland
Dramatic Art
Diane Elizabeth Wurtz, Maryland
Art History and Theory
Lawrence Rex Yarnell, Virginia
Social Sciences
Warren Yale Zeger, New Jersey
History

BACHELOR OF SCIENCE

| | |
|---|--|
| Luis Bogan, District of Columbia Zoology | Vivian Rule Lauderdale, District of Columbia Zoology |
| Subhash Chandra Domir, India Biology | Ernest Lee Mabrey, District of Columbia Mathematics |
| Minos Economides, Maryland Zoology | Ida Josephine Rheurk, Virginia Zoology |
| Lester Truman Goldstein, District of Columbia Chemistry | Gale Marie Sanderson, New York Biology |
| | Lurie Jessie Shima, District of Columbia Botany |

BACHELOR OF SCIENCE IN GENERAL STUDIES

| | |
|--|---|
| Robert Raymond Ohsiek, Virginia Political Science | John Merrit Wondergem, Florida Political Science |
|--|---|

BACHELOR OF SCIENCE IN MEDICAL TECHNOLOGY

| | |
|--------------------------------|--------------------------------|
| Wendy Lynne Freedman, Maryland | Caroline Janney Rust, Virginia |
| Margaret Leigh Kartus, Alabama | |

GRADUATE SCHOOL OF ARTS AND SCIENCES

MASTER OF ARTS

- Peter Moore Adams, Virginia
History
B.A. 1950, University of Virginia
- Analouse Clissold Bolten, District of Columbia
History
B.A. 1966, George Washington University
- Michael Alan Carson, Florida
Political Science
B.A. 1967, George Washington University
- Lauren Warshal Cohen, Maryland
English and American Literature
B.A. 1966, University of Washington
- Joel Ralph Crenshaw, Virginia
Economics
B.A. 1964, George Washington University
- Virginia Lee Draper, Virginia
Economics
B.A. 1964, University of Colorado
- Carolyn Fox Everard, Virginia
Speech Pathology and Audiology
B.A. 1965, George Washington University
- William Francis Flanigan, Jr., Maryland
Psychology
B.S. in E.E. 1961, Clarkson College of Technology
M.B.A. 1963, Cornell University
- Robert Matthew Foley, District of Columbia
Psychology
B.A. 1966, Lehigh University
- Elaine Kaplan Freeman, California
American Literary and Cultural History
B.A. 1958, Goucher College
- Barbara Murel Gage, West Virginia
English and American Literature
B.A. 1964, Randolph-Macon Woman's College
- Virginia R. Hetrick, Washington
Geography
B.A. 1964, George Washington University
- Gary Honickman, New York
Psychology
B.A. 1965, University of Vermont
- Charles Heckert Horn, Jr., Pennsylvania
Psychology
B.A. 1966, Dartmouth College
- Ellen May Johnson, Wisconsin
Sociology
B.A. 1962, Luther College
- Jonathan Stephen Kahane, New York
Psychology
B.A. 1966, Clark University
- Mildred Wight Kammholz, District of Columbia
Psychology
B.A. 1965, George Washington University
- Gary Young Larsen, District of Columbia
Psychology
B.A. 1963, Northwestern University
- Epp Anniki Miller, Maryland
Psychology
B.A. 1966, George Washington University
- Carolyn Eldred Moeller, District of Columbia
Psychology
B.A. 1966, Mary Washington College of the University of Virginia
- Sharon Anne Naecker, Louisiana
Psychology
B.A. 1967, Louisiana State University
- Larry Robert Nathan, Maryland
Economics
B.A. 1965, University of Connecticut
- Margot De La Mater Ormes, District of Columbia
Spanish Language and Literature
B.A. 1966, George Washington University
- Richard Lee Prather, Maryland
Psychology
B.A. 1958, University of Montana
- Sudha Vijayendra Rao, District of Columbia
History
B.A. 1964, Delhi University, India
- Mary Jane Riddle, Virginia
English and American Literature
B.A. 1965, Kansas State University of Agriculture and Applied Science

Sandra Lucile Roeder, Maryland
Sociology
B.A. 1965, Western Maryland College

Dorothy Dolores Rossi, Virginia
English and American Literature
B.A. 1962, Regis College, Mass.

Thomas Stephen Saquella, Virginia
Political Science
B.A. 1966, LaSalle College

Madeleine Marie Guyot Soudée, District of Columbia
French Language and Literature
B.A. 1966, George Washington University

Dominic Sorrentino, Virginia
Economics
B.B.A. 1964, George Washington University

Nancy Adelman Spector, Illinois
History
B.A. 1965, University of Illinois

Kirsten Pape Strassman, Maryland
Psychology
B.A. 1963, University of Copenhagen, Denmark

Vincent Anthony Thomy, Jr., South Carolina
Psychology
B.A. 1964, Duke University

Hasan Üner, Turkey
Economics
B.A. 1950, Ankara University, Turkey

Janet McIntire von Doenhoff, District of Columbia
History
B.A. 1962, Wittenberg University

Mary Ann Walla, New York
Art History and Criticism
B.A. 1964, Wagner College

William Charles Weneta, Maryland
History
B.A. 1967, George Washington University

Kathleen Mary Woehrling, District of Columbia
Political Science
B.A. 1965, Michigan State University

Marjorie Porter Wright, Virginia
Art History and Criticism
B.A. 1939, Hollins College

MASTER OF SCIENCE

Simon McGillivray Cargill, Virginia
Geology
B.S. 1966, George Washington University

James Russell Gilbert, Maryland
Anatomy
B.S. 1965, University of Maryland

James Franklin Grim, Virginia
Physiology
B.S. 1964, College of William and Mary

Stephen Funt Kaufman, Maryland
Mathematical Statistics
B.A. 1964, College of Emporia

Johnnie Lee Manning, District of Columbia
Microbiology
B.S. 1960, Morehouse College

Candace Ellen Hunter Plato, Maryland
Chemistry
B.S. 1957, Stetson University

Susan Jane Rockford, New York
Microbiology
B.S. 1966, Cornell University

Diane Johnson Slack, District of Columbia
Mathematics
B.S. 1966, George Washington University

Jerry Wayne Sonkens, Iowa
Anatomy
B.S. 1967, Brigham Young University

Harry Leslie Stuber, Jr., District of Columbia
Biology
B.A. 1966, Hamilton College

Swen Russel Swensen, Utah
Anatomy
B.A. 1963, Brigham Young University

MASTER OF FINE ARTS

Glenda Pearson Anderson, Virginia
Dramatic Art
B.A. 1966, Mary Baldwin College

Sharon Gregory Culbertson, District of Columbia
Painting
B.A. 1965, Scripps College

Elizabeth Tamsin De Mowbray, England
Painting

B.A. 1951, University of London,
England

B.A. 1967, George Washington
University

Henry Lewis Halem, Virginia
Ceramics

B.F.A. 1960, Rhode Island School
of Design

Judith Meyers Halem, Virginia
Ceramics

B.F.A. 1961, Massachusetts College
of Art

Suzanne Almira Horstmann, District
of Columbia

Painting
B.S. 1950, State University of New
York at Buffalo

Elisabeth Banigan Iddings, Virginia
Painting

B.A. 1946, George Washington
University

Lawrence Ronald Klar, Virginia
Dramatic Art

B.S. 1940, U.S. Military Academy

Jerry Dean Parsons, Maryland
Sculpture

B.A. 1963, Oklahoma City University

Laura Elizabeth Weaver Saile, Maryland
Graphics

B.A. 1964, University of Delaware

NATIONAL LAW CENTER

JURIS DOCTOR

William Wesley Bailey, New York

B.S. in B.A. 1964, M.B.A. 1965,
American University

Andrews Bruce Campbell, New York
(With Honors)

B.A. 1963, Harvard University

Joseph Edward Casey, Jr., District of
Columbia

B.A. 1964, Dartmouth College

Bruce Warren Churchill, Maryland
(With Honors)

B.S. 1961, University of Wisconsin

M.Bioradiol. 1963, University of
of California, Berkeley

Ph.B. 1965, Wayne State University

David Michael Davenport, Virginia

B.S. 1965, Mount St. Mary's College,
Md.

James Benedict Deerin, Jr., Virginia

B.A. 1965, The Citadel

John Thomas Dunn, Virginia

B.A. 1965, University of Notre Dame

John Wayne Edmiston, Virginia

B.A. 1963, Miami University

Joseph Ferrante, Jr., Maryland

B.A. 1962, Johns Hopkins University

M.A. 1964, New York University

Robert George Fierer, Pennsylvania

B.S. 1964, University of Notre Dame

Robert Nixon Franklin, Maryland

B.A. 1965, New Mexico State
University

Theodore Emil Galanthay, Virginia

B.E.E. 1961, Clarkson College of
Technology

David Foss Garrison, Massachusetts

B.A. 1965, Amherst College

Ralph Stephen Greer, Maryland
(With Honors)

B.S. 1953, U.S. Military Academy

Arthur James Harris II, Michigan
(With Honors)

B.A. 1965, Michigan State University

James R. Haynes, Kentucky

B.A. 1961, Fisk University

M.A. 1964, University of Michigan

Frank Richmond Heselton, Jr., Maryland
(With Honors)

B.A. 1963, University of Michigan

Edwin Recher Itnyre, Maryland

B.A. 1952, George Washington
University

Stephen Robert Jones, Pennsylvania

B.A. 1965, University of Michigan

Joseph Raymond Keilp, New Jersey

B.A. 1965, Georgetown University

Robert George Kinney, Maryland

B.A. 1960, Ohio University

Richard Douglas Kyle, Virginia

B.A. 1964, College of Idaho

Richard Allen Lambert, District of
Columbia

B.S. 1964, George Washington
University

Paul Burton Lang, Maryland

B.S. 1961, U.S. Naval Academy

Aaron Levine, Maryland

B.A. 1965, University of Maryland

Martin Gates Linihan, Jr., New York
(With Honors)

B.A. 1963, Hamilton College

B.E.E. 1965, Rensselaer Polytechnic
Institute

Michael Joseph McGreal, Maryland

B.S. 1959, Iona College

M.S. 1960, College of the Holy Cross

Cecil Paul Means, District of Columbia

B.A. 1957, University of Nebraska

Joseph George Metscher, New York

B.A. 1965, Fairleigh Dickinson
University

Peter J. Moss, Virginia

B.A. 1962, Gettysburg College

Robert William Mulcahy, Virginia

B.S. 1963, Boston College

Walter Watkins Nielsen, Virginia
(With Honors)

B.S. 1964, Ohio State University

Neil Harvey Offen, New York

B.A. 1965, Queens College, N.Y.

John Orman, Virginia

B.I.E. 1963, University of Florida

Dennis Ericksen Simmons, Nevada

B.S. 1955, Utah State University of

Agriculture and Applied Science

Thomas Michael Tweel, Virginia

B.B.A. 1964, Marshall University

John Aaron White, Jr., Nevada

B.A. 1965, University of Nevada

John William Wigert, Jr., Virginia

(With Honors)

B.S. (E.E.) 1965, Princeton University

Thomas Fort Williamson, Maryland

(With Honors)

B.A. 1962, Yale University

George Andrew Wisnovsky, Virginia

B.A. 1965, Seton Hall University

Don Alan Zimmerman, District of
Columbia

B.A. 1962, Pomona College

MASTER OF LAWS

Charles Paul Ake, Virginia

B.S. 1955, Villanova University

LL.B. 1963, George Washington
University

Daniel Frederick Billard, Maryland

B.S. in B.A. 1954, Syracuse University

J.D. 1967, University of Florida

Robert Ross Broxton, Maryland

B.A. 1960, The Citadel

LL.B. 1964, University of Alabama

Charles Edward Burroughs, Wisconsin

B.S. 1962, LL.B. 1965, University of
Wisconsin

Robert Henry Camp, Maryland

B.S. 1960, Mount St. Mary's College,
Md.

LL.B. 1964, University of Maryland

Hugh Don Campbell, Texas

B.B.A. 1959, McMurry College

LL.B. 1962, Southern Methodist
University

Thomas Basilio Cantieri, Virginia

B.A. 1956, University of North
Carolina at Chapel Hill

LL.B. 1961, University of Virginia

Penn Benjamin Chabrow, Virginia

B.S. 1960, Muhlenberg College

J.D. 1963, George Washington
University

Paul Rawson Conrad, Virginia

B.S. 1949, University of Kansas

LL.B. 1952, George Washington
University

William Pierce Elliott, Jr., Tennessee

B.A. 1958, Vanderbilt University

LL.B. 1961, University of Virginia

Fred Grabowsky, Virginia

B.S. 1949, U.S. Naval Academy

LL.B. 1958, Boston College

Donald May Haddock, Virginia

B.A. 1963, Princeton University

LL.B. 1966, University of Virginia

Willard Edmonston Hoag, District of
Columbia

B.E. in Ch.E. 1943, M.S. in Ch.E. 1947,
University of Southern California

LL.B. 1962, Southwestern University

William Christopher Lynch, Virginia

B.A. 1953, LL.B. 1956, Boston College

William Ronald Palmer, Virginia

B.A. 1956, LL.B. 1958, University of
Illinois

Leon Duane Santman, Maryland
 B.S. 1952, U.S. Coast Guard Academy
 LL.B. 1963, University of Houston
 Daniel Trocki, Virginia
 B.S. in Ed. 1954, LL.B. 1961, Temple
 University

Clement Max Vassanelli, Virginia
 B.A. 1963, Duquesne University
 J.D. 1966, Case Western Reserve
 University
 James Alexander Williamson, Maryland
 LL.B. 1952, Boston University

MASTER OF COMPARATIVE LAW

Soerastri Isminingsih Djojodipoero,
 District of Columbia
 M.A. 1960, Godjah Mada University,
 Indonesia

Junichi Machida, Japan
 LL.B. 1962, Chuo University, Japan
 Jose Luis Martinez, Mexico
 LL.B. 1966, Universidad de Nuevo
 Leon, Mexico

MASTER OF COMPARATIVE LAW (American Practice)

Olga Csaky Palotai, District of Columbia
 Dr. Jur. 1952, University of Budapest,
 Hungary
 M.S. in L.S. 1962, University of North
 Carolina at Chapel Hill

Odette Jibrail Raymond, District of
 Columbia
 B.A. 1958, Baghdad University, Iraq

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

BACHELOR OF SCIENCE (Civil Engineering)

Robert Charles Haven, Virginia

BACHELOR OF SCIENCE (Electrical Engineering)

Francis Howard Gage, Jr., New Jersey

Robert Frederick Xander, Maryland

MASTER OF ENGINEERING ADMINISTRATION

Elmer Havens Birdseye, Connecticut
 B.S. 1951, U.S. Military Academy
 George Frederick Esenwein, Maryland
 B.S. in Ac.E. 1955, Tri-State College

George Rudolph Zieglgansberger, Virginia
 B.S. 1959, University of Saskatchewan,
 Canada

MASTER OF SCIENCE

Taft Howard Broome, Jr., North Carolina
 B.S. in C.E. 1966, Howard University
 Thomas Robert Dobyns, Maryland
 B.E.E. 1963, University of Florida
 Leroy Thomas Dunnington, Maryland
 B.S. in E.E. 1964, Virginia Polytechnic
 Institute

Hugh Lionel Kingsley Goonetilleke,
 District of Columbia
 B.S. 1950, University of Ceylon
 Neal Howard Ishman, Virginia
 B.S. 1960, Pennsylvania State
 University

Donald Larry Margolies, Maryland
B.E.E. 1959, Rensselaer Polytechnic
Institute
William Emil Schneider, Maryland
B.S. 1960, Stetson University
Laith Ferhan Shubeilat, Jordan
B.E. 1964, American University at
Beirut, Lebanon

Charles Floyd Touchton III, Maryland
B.S. 1957, Georgia Institute of
Technology
Robert Shepherd Whitener, Virginia
B.S. in C.E. 1963, Clemson University
Robert Mayer Zeskind, District of
Columbia
B.S. in Engr. 1965, Case Western
Reserve University

DOCTOR OF SCIENCE

Nathan Arad, Israel
System Analysis
Dissertation: *An Evaluation of the System Effectiveness and Cost Effectiveness
of Large Multistage Flash Seawater Desalting Plants*
B.S. 1954, M.S. 1955, Carnegie-Mellon University

SCHOOL OF EDUCATION

BACHELOR OF ARTS IN EDUCATION

Bonnie Fahs Bair, Maryland
Elementary Education
(With Distinction)
Bonnie-Heather Bennett, Virginia
Elementary Education
George Henry Branigan III, Maryland
English
Mae Leona Case, Virginia
Elementary Education
Terry Allan Chandler, Maryland
English
Ghierstien Wheeler Conner, Louisiana
French
Rose Mary Gorman Derenge, District of
Columbia
Elementary Education
Beth Ann Eisler, District of Columbia
English

June Pearson Halsted, Vermont
Elementary Education
Sharon Ann Johnson, Virginia
Elementary Education
Donna Susan Elder Lutz, Virginia
Elementary Education
Lucia Maria McGrew, Virginia
English
Rose L. Paper, District of Columbia
Elementary Education
Helen Athena Santire, Maryland
Mathematics
Susan Bea Seidenbaum, Connecticut
Dance
Dorothy Hartley White, Virginia
Elementary Education

BACHELOR OF SCIENCE IN PHYSICAL EDUCATION

Bruce Linn Keith, Virginia

Raymond Spolar, Pennsylvania

MASTER OF ARTS IN EDUCATION

Genevieve Threasa Allen, Virginia
Reading
B.S. 1941, University of Wisconsin
Antoinette Viola Andolfatto, District of
Columbia
Elementary Education
B.S. 1960, Maryland State College,
Towson

Paul Anthony Artisst, District of
Columbia
School Administration
B.S. 1960, D.C. Teachers College
Mary Lee Au, Maryland
Elementary Education
B.S. in Ed. 1953, Pennsylvania State
College, West Chester

- Linda Joan Barnes, District of Columbia
Student Personnel Work in Higher Education
B.A. 1967, Cedar Crest College
- William Preston Blair, Jr., Virginia
Physical Education
B.S. in Ed. 1954, Wayne State University
- Joan Lea Bowers, Illinois
Student Personnel Work in Higher Education
B.A. 1967, Culver-Stockton College
- Robert Pope Bowling, Maryland
School Administration
B.S. 1961, Maryland State College, Towson
- Jay H. Boyar, District of Columbia
Student Personnel Work in Higher Education
B.A. 1965, Marist College
- Beverly Joan Brannock, District of Columbia
Guidance
B.A. 1961, University of North Carolina at Greensboro
- Mary Lavery Broad, Maryland
Adult Education
B.A. 1949, University of Minnesota
- Elise Curry Brownell, Maryland
Secondary Education
B.A. 1941, Duke University
- M. Susan Bryan, Virginia
Special Education
B.A. 1964, Marshall University
- Nana Mae Bush, Maryland
School Administration
B.S. in Ed. 1943, Pennsylvania State College, California
- Winifred Norene Campbell, Virginia
Secondary Education
B.A. in Ed. 1964, George Washington University
- Josef Francis Cerwonka, District of Columbia
Elementary Education
B.A. 1950, Catholic University of America
- Richard Wesley Cole, Virginia
School Administration
B.S. 1964, Virginia Polytechnic Institute
- Helen Eunice Cook, Maryland
Guidance
B.S. 1960, Maryland State College, Bowie
- Jacqueline Rhea Cooper, New Jersey
Student Personnel Work in Higher Education
B.A. 1967, New York University
- Charles Brian Cordrey, Maryland
Curriculum
B.S. 1964, Maryland State College, Salisbury
- Rosemary Nigrelli Cummings, Maryland
Special Education
B.A. in Ed. 1965, George Washington University
- Sharie Louise Dean, Maryland
Physical Education
B.S. 1955, West Virginia Wesleyan College
- Juanita Pendergrass Dennis, District of Columbia
Early Childhood Education
B.S. 1949, D.C. Teachers College
- Stuart Warner Douglas, Maryland
Secondary Education
B.S. 1960, State University of New York, College at Oswego
- Jean Margaret Beute Eichenberger, District of Columbia
Special Education
B.S. 1943, Western Michigan University
- Mary Rutledge Eldredge, Texas
Student Personnel Work in Higher Education
B.A. 1967, George Washington University
- Lerleen Overall Ennis, District of Columbia
School Administration
B.S. 1957, D.C. Teachers College
- Olive Marie Wright Ficklin, District of Columbia
Elementary Education
B.S. 1956, D.C. Teachers College
- Patricia Heskin Flamm, Virginia
Guidance
B.S. in Ed. 1962, Pennsylvania State College, Indiana
- Ann Marie Ford, Virginia
Guidance
B.S. 1955, University of Louisville
- Gerald Edward Franks, Maryland
Secondary Education
B.S. 1967, Maryland State College, Frostburg
- Franklin Delano Freeman, Virginia
Physical Education
B.S. 1960, East Carolina University

- Jo Anne Fulton, Virginia
Early Childhood Education
B.A. in Ed. 1967, George Washington University
- Carolyn Jane Glaser, District of Columbia
Guidance
B.A. 1965, City College, New York
- Everett Allan Golihen, Maryland
School Administration
B.S. 1962, D.C. Teachers College
- Robena Smith Gore, Virginia
Reading
B.A. 1944, University of California, Berkeley
- Richard Penrose Gorrell, Virginia
Secondary Education
B.A. in Ed. 1967, George Washington University
- Virginia Elizabeth Gray, Maryland
Guidance
B.S. in Ed. 1956, Pennsylvania State College, West Chester
- Patricia Dooley Hale, Michigan
Guidance
B.A. in Ed. 1962, George Washington University
- Elizabeth Barrett Hanning, Pennsylvania
Elementary Education
B.A. 1964, Wilson College, Pa.
- Barbara King Hardy, District of Columbia
School Administration
B.S. 1954, D.C. Teachers College
- Edward Raymond Harris, Jr., Virginia
Secondary Education
B.A. 1967, Eastern Nazarene College
- Juanita W. Harris, District of Columbia
Guidance
B.S. in Ed. 1945, D.C. Teachers College
- William Herbert Harris, District of Columbia
Guidance
B.A. 1950, Howard University
- Mary Alice Franklin Hatwood, District of Columbia
Secondary Education
B.S. 1962, Virginia State College
- Sherma Philips Hawkins, Virginia
History of Education
B.A. 1964, University of North Carolina at Chapel Hill
- Edward George Herczyk, Virginia
School Administration
B.A. in Ed. 1962, Arizona State University
- Kay Ruffner Hickey, Maryland
Elementary Education
B.S. in Ed. 1958, Madison College
- Christopher Craig Hickley, Maryland
Secondary Education
B.A. 1963, American University
- Dennis Wesley Hill, Virginia
Physical Education
B.S. in P.E. 1962, George Washington University
- Alice Andrews Houser, Maryland
School Administration
B.A. 1940, Indiana University
- Frances Cockrell Howlette, Virginia
School Administration
B.A. 1957, Virginia Union University
- Joan Leslie Hutchinson, New Jersey
Secondary Education
B.A. 1967, New Jersey State College, Montclair
- Thomas Jacob Hyer, Virginia
Physical Education
B.A. in Ed. 1956, Glenville State College
- Calantha K. Ingram, District of Columbia
School Administration
B.A. 1952, Lane College
- Elizabeth Acty Jones, District of Columbia
Elementary Education
B.A. 1942, D.C. Teachers College
- Beatrice Cornelia Judge, District of Columbia
Elementary Education
B.S. in Elem.Ed. 1957, State University of New York at Buffalo
- Basil Louis Kalandros, District of Columbia
Secondary Education
B.S. 1963, George Washington University
- Joseph Andrew Kitzinger, Maryland
Special Education
B.S. in Ed. 1952, Pennsylvania State College, Lock Haven
- Richard Lee Knode, Maryland
Physical Education
B.S. 1961, Shepherd College
- Alice Stockton Konze, Maryland
Elementary Education
B.A. 1942, University of Washington
- Inez Gladys Lattimore, District of Columbia
Special Education
B.S. 1963, D.C. Teachers College
- Larry Wayne Layman, Maryland
Physical Education
B.S. 1963, Shepherd College

- Richard Michael Lefante, District of Columbia
Elementary Education
B.A. 1966, C. W. Post College
- Joan Rubin Leib, Virginia
Special Education
B.A. in Ed. 1967, George Washington University
- Pasquale James Lendino, District of Columbia
Physical Education
B.S. in Health Ed. 1962, Pennsylvania State College, West Chester
- Hugh Lynch III, Maryland
Secondary Education
B.A. 1964, Princeton University
- Grant Bartholomew Martin, Maryland
School Administration
B.S. 1956, Maryland State College, Bowie
- Elaine Hardy Matthews, Maryland
Health Education
B.S. 1961, Howard University
- Elaine Marie Mattson, Massachusetts
Student Personnel Work in Higher Education
B.A. 1967, Clark University
- Katharene Ann Mayo, Virginia
Special Education
B.S. in Ed. 1959, University of Alabama
- Billie Langston Mays, Virginia
Early Childhood Education
B.S. 1960, Florida State University
- Herman Richard Menzer, Jr., Virginia
Classroom Teaching
B.A. in Ed. 1962, George Washington University
- Barbara Irene Mummart, District of Columbia
Student Personnel Work in Higher Education
B.S. in Ed. 1963, West Virginia University
- Joan Young Murray, District of Columbia
Reading
B.S. 1957, Howard University
- Donald Charles Perriello, Virginia
Physical Education
B.S. in P.E. 1964, George Washington University
- Wanda Belle Picco, Maryland
Guidance
B.S. 1963, University of Maryland
- Helen Alene Pollack, Virginia
Secondary Education
B.A. 1967, Ohio State University
- Annie Green Ponds, District of Columbia
Reading
B.A. 1942, Bennett College, N.C.
- Marilyn Hausfeld Ratnofsky, District of Columbia
Secondary Education
B.A. 1967, Brooklyn College
- Andrea Robison, District of Columbia
Secondary Education
B.S. in Ed. 1966, Pennsylvania State College, Millersville
- Jane Suzanne Rogich, Virginia
Elementary Education
B.A. 1957, Barnard College
- Shirley Yvonne Rowe, Maryland
Guidance
B.S. 1955, University of Maryland
- Emily Gray Sanks, Maryland
Special Education
B.A. 1950, Knoxville College
- Gladys Gray Saunders, District of Columbia
School Administration
B.S. 1947, Howard University
- Sara Louise Schneider, Maryland
Secondary Education
B.A. 1964, University of Washington
- Chester Martin Schultz, Virginia
Secondary Education
B.S. 1963, University of Maryland
- Marie Goodwin Shelton, District of Columbia
Reading
Ed.B. 1959, Illinois Teachers College
- Aurelia Cecelia Smith, District of Columbia
Special Education
B.S. 1957, D.C. Teachers College
- Elizabeth Skinner Smith, District of Columbia
School Administration
B.S. 1956, D.C. Teachers College
- Shirley Tubman Smith, Maryland
School Administration
B.S. in Ed. 1945, Maryland State College, Salisbury
- Michael Joseph Sokol, Maryland
School Administration
B.S. 1955, State University of New York, College at Oswego
- David George Speck, District of Columbia
Student Personnel Work in Higher Education
B.A. 1967, George Washington University

- Geneva Marie Cogdell Spencer, District of Columbia
Elementary Education
B.S. 1954, Elizabeth City State College
- Terry Stewart, District of Columbia
Elementary Education
B.S. 1961, Virginia State College
- Susan Brayton Straight, Virginia
Elementary Education
Ed.B. 1964, National College of Education
- Donald Rapley Sutherland, Maryland
Secondary Education
B.A. 1954, Denison University
B.D. 1958, Virginia Theological Seminary
- Carolyn C. Taft, Virginia
Guidance
B.A. 1940, Colorado State College
- Jack Allen Tapper, Illinois
Secondary Education
B.A. 1959, Monmouth College, Ill.
- Sonya Taylor, Virginia
School Administration
B.A. in Ed. 1959, University of Florida
- Leonard Francis Theriault, Virginia
Secondary Education
B.A. 1963, Providence College
- Doris Smith Thompson, District of Columbia
School Administration
B.S. 1955, Fayetteville State College
- Janet Tricamo, New York
Student Personnel Work in Higher Education
B.S. in Ed. 1967, Fordham University
- Lillie Jackson VanLandingham, District of Columbia
School Administration
B.S. in Ed. 1954, Winston-Salem College
- Evelyn Hunter Van Putten, District of Columbia
School Administration
B.S. 1942, D.C. Teachers College
- Vera Elena Vinogradoff, Virginia
Special Education
B.A. 1966, Goucher College
- Bonnie Wallace, New York
Elementary Education
B.A. 1967, American University
- Louise Marie Walsh, Virginia
Early Childhood Education
B.A. 1935, Good Counsel College
- James Dale Walters, Virginia
Special Education
B.S. in P.E. 1960, George Washington University
- Barbara Helen Wentz, District of Columbia
Special Education
B.S. 1965, Skidmore College
- Melitha Washington White, District of Columbia
School Administration
B.S. 1961, D.C. Teachers College
- James Herman Wiggs II, District of Columbia
School Administration
B.S. 1961, Tennessee Agricultural and Industrial State University
- Jean Karen Wolf, District of Columbia
Guidance
B.S. 1964, University of Minnesota
- Joyce Tamara Yavner, District of Columbia
Elementary Education
B.A. in Ed. 1965, George Washington University

EDUCATION SPECIALIST

- Lu Juana Ruffin Butts, District of Columbia
School Administration
B.S. 1964, D.C. Teachers College
M.A. in Ed. 1966, George Washington University
- Irma Marie Cole, Maryland
School Administration
B.S. 1959, University of Maryland
M.A. in Ed. 1964, George Washington University
- Ruth Bittler Cornfield, Virginia
Curriculum
B.A. 1934, University of California, Los Angeles
M.A. in Ed. 1960, George Washington University
- Mary Bowers Girdon, Virginia
Reading
B.A. 1935, Roanoke College
M.A. 1945, College of William and Mary

Barbara Guidry Graham, Louisiana
 School Administration
 B.A. in Ed. 1954, Southern University
 and Agricultural and Mechanical
 College
 M.A. 1965, Ohio State University
 Lillian Lorraine Morse, District of
 Columbia
 Guidance
 B.S. 1950, M.S. 1959, Howard
 University

Elizabeth Bosley Seegar, Virginia
 Guidance
 B.A. 1932, Goucher College
 M.A. 1937, Columbia University
 Geoffrey Mason Whitmore, Maryland
 Guidance
 B.S. 1962, Ed.M. 1965, Maryland State
 College, Frostburg

DOCTOR OF EDUCATION

Alan Leslie Dodd, Maryland
 Administration and Supervision
 Dissertation: *A Historical Study of the Position of Elementary Instructional
 Supervisor in the Montgomery County, Maryland, Public Schools*
 B.A. 1951, Western Maryland College
 Ed.M. 1956, University of Maryland

Robert Francis Jarecke, Colorado
 Teacher Education
 Dissertation: *A History of Title XI of the National Defense Education Act,
 Public Law 88-665, with Emphasis on the Educational Media Institutes*
 B.S. in Ed. 1947, Ed.M. 1951, University of Virginia

Atlee C. Kepler, Maryland
 Administration and Supervision
 Dissertation: *An Analysis of the Present Status of Career-oriented Programs
 Offered by the Public Junior Colleges in Maryland*
 B.A. 1942, Washington College
 M.A. 1950, Columbia University

Margaret Harrison Moss, Virginia
 Special Education
 Dissertation: *Performance of Disadvantaged and Middle-class Preschool Children
 on a Language Coding Test of Space and Location*
 B.A. 1957, M.A. 1961, Vanderbilt University

Walter Harry Ray, Maryland
 Administration and Supervision
 Dissertation: *An Analysis of the Assistance Provided for Professional Growth
 of Inexperienced Elementary School Teachers in Montgomery County, Maryland,
 Public Schools*
 B.S. 1952, University of Pittsburgh
 M.A. in Ed. 1958, Lehigh University

James J. Toquinto, Maryland
 Administration and Supervision
 Dissertation: *A Study of the Relationship of Chronological Age at the Time of
 Entrance to First Grade to Subsequent Academic Achievement in the Element-
 ary Schools of Area Three of the Montgomery County Public Schools*
 B.S., M.A. 1950, West Virginia University

SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION

BACHELOR OF BUSINESS ADMINISTRATION

- | | |
|---|---|
| Allie Paul Ash, Jr., Virginia Accounting | Gary Wayne Hart, Maryland Business Administration |
| Terry Lynn Brenneman, Pennsylvania Accounting | John Lemuhani Nlebgwa, District of Columbia Business Administration |
| Theodore Louis Cooper, Virginia Business Administration | Thomas Emmett O'Connor, Jr., New York Accounting |
| Bogden Herbert Fabrycy, District of Columbia International Business | Aurapin Panupong, Maryland Accounting |
| Joseph Evan French, Ohio Business Administration | Glenn Frederic Peterson, Nebraska Business Administration |
| Ora Burton Gray, Jr., Virginia Business Administration | Lawrence Keith Pines, New York Accounting |
| Michael Persons Gwinn, District of Columbia Business Administration | Richard Rosenbluth, Pennsylvania Accounting |

BACHELOR OF SCIENCE IN GENERAL STUDIES

- | | |
|---|---|
| William Harry Baker, Pennsylvania Business Administration | Donald Davenport Engen, Virginia Business Administration |
| Harris Hartwell Ball, Jr., Maryland Business Administration | Robert Bruce Kohr, Virginia Business Administration |
| Samuel Clinton Bazzell, Maryland Business Administration | Frank Sylvester Haecherl, Virginia Business Administration |
| Clarence Arthur Blouin, Virginia Business Administration | George Andrew Krout, Maryland Business Administration |
| Richard Shelley Brooks, Virginia Business Administration | Michael H. Melvin, Virginia Business Administration |
| James Bernice Cain, Virginia Business Administration | Emerson William Myers, Virginia Business Administration |
| David Kinsley Clarke, New York Business Administration (With Distinction) | Reginald Edward Newman, Virginia Business Administration |
| Kenneth Lee Darr, Maryland Business Administration | Norman Kenneth Owens, New Jersey Business Administration |
| | John Donald Stufflebeem, Virginia Business Administration |

MASTER OF ARTS IN GOVERNMENT

- | | |
|--|---|
| Shirley Barlow, Virginia Public Administration B.A. in Govt. 1960, George Washington University | Brian Gillis Mason, District of Columbia Public Administration B.A. 1964, University of Wyoming |
| Thomas West Carr, District of Columbia Public Administration B.S. in Comm. 1950, The Citadel | Robert Edward Randolph, Virginia Public Administration B.Gen.Ed. 1963, Municipal University of Omaha |
| Jerome B. Friedman, Maryland Public Administration B.A. 1961, Brooklyn College | Joseph Cornelius Ruddy, Jr., Maryland Public Administration B.S. in B.A. 1966, Georgetown University |

MASTER OF BUSINESS ADMINISTRATION

- Charles Carroll Adsit, Pennsylvania
Business Administration
B.S. 1955, Gannon College
- Robert Henry Annan, Virginia
Business Administration
B.S. 1960, Kansas State University
of Agriculture and Applied Science
- Charles Allen Ashley, New York
International Business
B.B.A. 1967, George Washington
University
- Arthur Stephan Averbook, Minnesota
International Business
B.A. 1966, Michigan State University
- Murray Duane Backhaus, Nebraska
Business Administration
B.S. in B.A. 1955, University of
Nebraska
- Marvin Leroy Baird, Virginia
Health Care Administration
B.S. 1958, Central State College, Okla.
- Douglas Chesney Bishop, California
Business Administration
B.A. 1964, University of California,
Los Angeles
- David Norman Blais, Virginia
Business Administration
B.A. 1960, University of Massachusetts
- David Robert Braunstein, Maryland
Business Administration
B.S. in Engr. 1963, University of
Michigan
- Grant B. Clayburn, Maryland
Business Administration
B.S. 1955, University of Utah
- Edward Baumann Collins, Illinois
International Business
B.A. 1966, Boston University
- Sister Mary Joseph Crowley, New York
Health Care Administration
B.S. in Nursing 1966, New York
University
- Fredrick Burpee Dargie, Virginia
Business Administration
B.S. in Ed. 1953, Massachusetts State
College, Lowell
- Stephen Joseph Faherty, Virginia
Business Administration
B.S. 1962, St. Louis University
- Thomas Leslie Foster, Virginia
Business Administration
B.S. 1959, Northwestern University
- David Binney Hall, Rhode Island
Business Administration
B.A. 1959, Brown University
- Phillip Kaga Heacock, Maryland
Business Administration
B.S. in M.E. 1961, University of Illinois
- Roger Bruce Hyatt, Maryland
Accounting
B.S. 1967, Columbia Union College
- Lofton Guy Jackson, Virginia
Business Administration
B.S. in E.E. 1960, University of
Alabama
- Peter Mark Keser, New York
Health Care Administration
B.A. 1959, Le Moyne College
- Billy James Middlebrook, Virginia
Business Administration
B.S. 1964, Ohio State University
- David Andreas Peterson, California
International Business
B.A. 1964, Occidental College
- J.D. 1967, George Washington
University
- Arthur Herbert Rensing, District of
Columbia
International Business
B.A. 1967, Transylvania College
- Ramon Kendall Richardson, Virginia
Business Administration
B.Gen.Ed. 1961, Municipal University
of Omaha
- James Bernie Schofield, Massachusetts
Health Care Administration
B.A. 1949, Westminster College, Mo.
- Edgar Oscar Sheetz, Maryland
Health Care Administration
B.A. 1955, Bridgewater College
- M.S. in P.H. 1962, University of
North Carolina at Chapel Hill
- Payton Douglas Torrence, Sr., Maryland
Health Care Administration
B.A. 1963, University of Virginia
- Nancy Ann Williams, Florida
Health Care Administration
B.S. 1954, University of Illinois
- Jeanne Kinnamon Woolery, Virginia
Business Administration
B.S. in Ed. 1967, Abilene Christian
College
- Robert Allen Yorks, Virginia
Business Administration
B.S. 1958, Pennsylvania State
University

MASTER OF SCIENCE IN ADMINISTRATION

Emanuel Michael Migliorisi, Maryland
Automatic Data Processing
B.A. 1961, Columbia University

MASTER OF SCIENCE IN BUSINESS ADMINISTRATION

- John George Albert, Maryland
B.S. 1949, U.S. Military Academy
M.S. in Engr. 1953, University of Michigan.
- Thomas Albert Aldrich, Texas
B.A. 1963, George Washington University
- Earl James Archer, Virginia
B.S. 1963, University of Illinois
- Norma Ann Archer, California
B.A. 1963, University of Southern California
- Philip Neal Austen, Maryland
B.A. in Ed. 1947, Eastern Washington State College
- Thomas Edward Benson, Maryland
B.S. 1947, U.S. Military Academy
- Charles Robert Bentley, Ohio
B.M.E. 1949, Ohio State University
B.S. in B.A. 1958, University of Dayton
- John James Betz, Jr., Oregon
B.Gen.Ed. 1963, Municipal University of Omaha
- Thomas Chester Blake, Jr., Arkansas
B.A. 1955, Memphis State University
- John Dale Blanchard, Virginia
B.A. 1956, George Washington University
- George August Bohlen, South Carolina
B.S. in M.E. 1958, Clemson University
M.S. in I.E. 1963, Purdue University
- Kyle Watson Bowie, Virginia
B.S. 1946, U.S. Military Academy
- Mack Carison Branham, Jr., South Carolina
B.S. 1953, Clemson University
B.D. 1958, S.T.M. 1963, Lutheran Theological Southern Seminary
- Bryan Bailey Brown, Jr., California
B.S. 1946, U.S. Naval Academy
B.S. (Ac.E.) 1955, U.S. Naval Postgraduate School
M.S. (Ac.E.) 1956, Massachusetts Institute of Technology
- Robert George Buechler, Pennsylvania
B.S. 1948, U.S. Naval Academy
- Charles Stuart Carlisle, Virginia
B.S. 1946, U.S. Naval Academy
- Douglas Henry Carter, Virginia
B.S. 1953, University of Maryland
- Alfred White Chandler, Jr., Virginia
B.A. 1966, George Washington University
- John Palmer Chandler, New Hampshire
B.S. 1949, U.S. Naval Academy
M.S. 1955, Harvard University
M.S. 1960, Rensselaer Polytechnic Institute
- Thomas Claude Collipi, Arizona
B.Gen.Ed. 1963, Municipal University of Omaha
- John Leonard Conley II, Louisiana
B.S. (S.S.) 1956, Georgetown University
- Albert Bernard Conti, Massachusetts
B.S. in M.E. 1963, Northeastern University
- Clement Timothy Corcoran, Virginia
B.S. 1961, University of Maryland
- David Shover Corzilius, Ohio
B.S. in Agri. 1955, Ohio State University
- William Henry Cowper, Virginia
B.A. 1942, Colgate University
- Noel Elwood Craun, Jr., Nevada
B.S. 1949, University of Maine
- Lawrence Keene Creswell, Maryland
B.S. 1957, University of Maryland
- Merrell Edward Dean, Kentucky
B.S. 1958, University of Kentucky
- Michael Edward De Armond, Virginia
B.S. 1950, U.S. Military Academy
- Herman Louis Delaune, Louisiana
B.S. 1948, Louisiana State University
- Robert Anthony Delmar, Maryland
B.S. 1953, University of Maryland
- Vaughn E. Denning, Idaho
B.S. in M.E. 1951, University of Idaho
- Walter Ray Dillow, Illinois
B.Gen.Ed. 1964, Municipal University of Omaha
- Thomas Stephen Doane, New York
B.S. in B.A. 1953, Rutgers, the State University

- Hobart Lewis Douglass, Virginia
B.S. 1949, Oklahoma State University
of Agriculture and Applied Science
- Ray Francis Drummond, Maryland
B.S. 1949, U.S. Military Academy
- John Joseph Drury, Virginia
B.A. 1960, Rutgers, the State University
- Leland Gilbert Fay, New Jersey
B.S. 1958, U.S. Military Academy
M.S. in E.E. 1962, Air Force Institute
of Technology
- Robert Irving Felch, Pennsylvania
B.S. 1941, Lehigh University
- Thomas Edward Fitzpatrick, Michigan
B.B.A. 1963, University of Detroit
- George Seward Fleeson, Kansas
B.A. 1947, University of Kansas
- John Stark Gardenier II, Virginia
B.A. 1959, Yale University
- Edward Norton Giddings, Connecticut
B.S. 1958, University of Connecticut
- Melvin Paul Gillis, Ohio
B.B.A. 1961, University of Texas
- Edwin Saxby Goepper, Virginia
B.S. in Mil.Std. 1959, University of
Maryland
- Allen McLane Goodson, Virginia
B.A. 1950, University of Florida
- Irwin Patton Graham, Texas
B.S. in C.E. 1949, The Citadel
M.S. 1958, Air Force Institute of
Technology
- Keith Russell Grimes, Texas
B.A. 1956, University of Texas
B.S. 1957, Pennsylvania State
University
- George Edward Hall, Jr., Virginia
B.S. 1946, U.S. Military Academy
M.S. 1954, University of Pittsburgh
- John Wallace Halsey, Virginia
B.Gen.Ed. 1965, Municipal University
of Omaha
- Donald Auer Hamlin, Louisiana
B.B.A. 1955, Loyola University, La.
- William Robert Hanks, Arkansas
B.S. 1942, New Mexico State
University
- Patrick J. Hannifin, New Mexico
B.S. 1944, U.S. Naval Academy
- John Joaquin Hargreaves, Texas
B.A. 1953, Macalester College
- Stephen E. Harrison, Texas
B.Gen.Ed. 1964, Municipal University
of Omaha
- Richard Henry Hartke, Ohio
B.S. in Ae.E. 1956, Purdue University
M.S. in Ae.E. 1962, Air Force
Institute of Technology
- William Crofford Hayes, Arizona
B.A. in Ed. 1954, Arizona State
University
- Harold Richard Hayworth, Virginia
B.S. 1947, Florida Southern College
- Gerald Keith Hendricks, Oregon
B.S. 1951, U.S. Military Academy
M.S. 1959, Air Force Institute of
Technology
- William Francis Hime, California
B.Gen.Ed. 1964, Municipal University
of Omaha
- James Robert Hogg, California
B.S. 1956, U.S. Naval Academy
- Charles Francis Horne III, Virginia
B.S. 1952, U.S. Naval Academy
- John Cecil Hughes, Illinois
B.S. 1966, University of Maryland
- Leo Doyle Johns, Oklahoma
B.S. 1961, University of Maryland
- Jordan David Johnson, Alabama
B.S. in Phar. 1955, University of
Kansas
- Theodore Lloyd Johnson, Virginia
B.S. 1944, U.S. Naval Academy
- Herbert Harlan Kaiser, Jr., Illinois
B.A. 1953, Yale University
LL.B. 1960, Harvard University
- Raymond Levis Kampe, Maryland
B.Gen.Ed. 1961, Municipal University
of Omaha
- Roland Arthur Kline, California
B.S. 1946, U.S. Military Academy
- James Bernard Kramer, New York
B.S. in Comm. 1956, University of
Notre Dame
- Richard Paul Lee, Virginia
B.A. 1960, George Washington
University
- Phillip Edward Lowry, Michigan
B.S. 1961, University of Maryland
- Richard Arden Mackel, Alabama
B.Aerospace Engr. 1967, Auburn
University
- William Foote Marshall, Jr., South
Carolina
B.S. in B.A. 1955, University of
South Carolina
- Linwood Bertram Mather, Maryland
B.S. 1950, U.S. Military Academy
M.A. 1960, Middlebury College

- Hoyt Porter Maulden, Florida
B.S. in Gen.Std. 1967, George Washington University
- Stan Leon McClellan, District of Columbia
B.Gen.Ed. 1964, Municipal University of Omaha
- John Martin McDonald, Montana
B.S. 1957, U.S. Military Academy
- Kenneth Edwin McIntyre, Vermont
B.S. 1949, U.S. Military Academy
M.S. 1955, Harvard University
- William Henry McLaughlin, Jr., Florida
B.S. 1944, U.S. Naval Academy
- Andrew William O'Donnell, Virginia
B.A. 1949, New York University
- John Thomas O'Halloran, Illinois
B.Gen.Ed. 1963, Municipal University of Omaha
- Alfred Richard Olsen, Jr., Virginia
B.S. 1944, U.S. Naval Academy
- William Bolt Owens, Texas
B.Gen.Ed. 1963, Municipal University of Omaha
- James Blaine Paxson, Jr., Texas
B.Gen.Ed. 1962, Municipal University of Omaha
- Earl Goodwin Peck, New Jersey
B.A. 1958, University of Texas
- Frederick Gibson Perkins, Virginia
B.A. 1946, Cornell University
- Wesley Lynn Ralston, Virginia
B.S. in Ae.E. 1948, University of Colorado
B.S.(E.E.) 1964, U.S. Naval Postgraduate School
- Robert Leonard Rascoc, Virginia
B.S. 1959, University of California, Los Angeles
B.S. in E.E. 1965, University of New Hampshire
- James Walter Rawers, Virginia
B.S. 1949, U.S. Military Academy
M.S. in Nuclear Engr. 1957, North Carolina State University at Raleigh
- Thomas Richard Reed, Iowa
B.S. 1953, Drake University
- Leonard Lee Reese, Jr., Virginia
B.S. in B.A. 1941, University of Florida
- John Michael Reid, Missouri
B.S. 1957, University of Missouri
- William James Rhine, Virginia
B.S. 1954, University of California, Los Angeles
- Lyle Marvin Rich, Utah
B.S. 1955, University of Utah
- William Rowland Richardson, Georgia
B.S. 1951, U.S. Military Academy
- Guy Lavaughn Roberts II, Virginia
B.S. in B.A. 1949, University of Tennessee
- Joseph Barnett Rogers, Virginia
B.S. 1946, U.S. Military Academy
- Evan William Rosencrans, Pennsylvania
B.S. 1948, U.S. Military Academy
- Timothy Eugene Rowan, Virginia
B.A. 1947, Duke University
- Gerald Thomas Rudolph, California
B.S. 1958, U.S. Military Academy
M.S. in Astro. 1963, Air Force Institute of Technology
- Jack Calvin Runyan, Indiana
B.S. in M.E. 1954, Purdue University
- Samuel Lee Sayers, Texas
B.S. 1956, University of Missouri
- Jerry Halbert Schussele, Missouri
B.A. 1952, Wichita State University
- Allan Carruth Smith, Texas
B.A. 1952, LL.B. 1954, Stanford University
- Robert Studebaker Smith, Virginia
B.S. 1946, U.S. Naval Academy
- Scott George Smith, Florida
B.A. 1951, University of Alabama
- Francis Ernest Stewart, Nebraska
B.A. 1953, Nebraska Wesleyan University
- Ronald Earl Swanson, Texas
B.Gen.Ed. 1965, Municipal University of Omaha
- Joseph Truitt Talbert, Jr., California
B.S. 1956, U.S. Naval Academy
- James Thomas Timidaiki, Virginia
B.S.(Ae.E.) 1955, U.S. Naval Postgraduate School
- Richard Norman Totten, Alabama
B.S. 1966, Whitworth College
- Edward Patrick Travers, Virginia
B.A. 1965, University of Maryland
- Stanley Milward Umstead, Jr., Ohio
B.S. 1951, U.S. Military Academy
- Daniel David Unruh, California
B.A. 1958, San Francisco State College
- George Marshall Vartanian, Massachusetts
B.A. 1953, University of Massachusetts
- William Ruble Vineyard, Virginia
B.S. 1964, U.S. Military Academy

Robert Ernest Walker, Illinois
 B.A. 1954, Southern Illinois
 University
 Donald August Welsh, Nebraska
 B.S. in E.E. 1962, University of
 Nebraska
 Charles Hamilton Whitley, Florida
 B.S. in Mil.Sci. 1953, University
 of Maryland

Ralph Ensign Wilson, Jr., District of
 Columbia
 B.S. 1949, U.S. Naval Academy
 B.S. (E.E.) 1955, M.S. (E.E.) 1956,
 U.S. Naval Postgraduate School
 John George Wissler, Maryland
 B.S. in C.E. 1948, Marquette
 University
 David Frank Wissmar III, Hawaii
 B.S. in C.E. 1956, University of Utah
 Harold Dean Yow, Arkansas
 B.A. 1950, University of Arkansas

MASTER OF SCIENCE IN FINANCIAL MANAGEMENT

William Edward Armstrong, Maryland
 B.S. 1950, University of Maryland
 Herbert Robert Tiede, Connecticut
 B.S. 1953, U.S. Naval Academy
 Richard Townsend Tinney, Virginia
 B.S. 1945, U.S. Naval Academy

William Lawrence Webb, Texas
 B.A. 1967, George Washington
 University

MASTER OF SCIENCE IN GOVERNMENTAL ADMINISTRATION

Charles Clifford Green, District of
 Columbia
 B.A. 1963, George Washington
 University

Donald Wayne Thomas, District of
 Columbia
 B.I.E. 1958, University of Florida

MASTER OF SCIENCE IN PERSONNEL ADMINISTRATION

Benjamin Gilchrist Allen, Virginia
 B.S. 1948, U.S. Naval Academy
 Carl August Boeger, Jr., Maryland
 B.S. 1956, University of Baltimore
 John Oakley Childs, Texas
 B.S. in M.E. 1953, Texas A&M
 University
 Donald Putnam Curtis, Virginia
 B.S. 1944, U.S. Naval Academy
 James Garfield Doss, Virginia
 B.S. 1949, University of California,
 Berkeley
 Robert Wayne Ferguson, Kansas
 B.A. 1947, Dartmouth College
 John Edwin Ford, Florida
 B.S. in B.A. 1960, Florida State
 University
 Monchie Middleton Gunter, Jr., Florida
 B.A. 1962, University of Mississippi
 Ramon Jerome Hacker, Maryland
 B.S. 1967, Johns Hopkins University
 William Ernest Hathaway, Maryland
 B.S. 1961, U.S. Military Academy

David Ott Hoagland, New Jersey
 B.S. 1954, University of Wisconsin
 Brian James Horan, New York
 B.S. in B.A. 1964, The Citadel
 Wyatt Slater Mapp, Jr., Virginia
 B.S. in B.A. 1964, University of
 Richmond
 Samuel Donald Morrone, Maryland
 B.S. 1960, Pennsylvania State
 University
 John Lonzo O'Neill, Maryland
 B.A. 1960, University of Maryland
 Roy Milford Rawlings, Virginia
 B.S. 1967, University of Kansas
 Charles Russell Schwarz, Texas
 B.A. 1952, Texas A&M University
 Dennis Young Slate, Virginia
 B.S. in Ed. 1961, Central Methodist
 College
 John Gilbert Stimis, Virginia
 B.S. in B.A. 1960, University of
 Florida

MASTER OF SCIENCE IN PUBLIC ADMINISTRATION

- A. J. Baker, Arkansas
B.S. in Ed. 1956, University of Arkansas
- James Bernard Bennett, Illinois
B.S. 1954, University of Illinois
- William McDowell Berry, Jr., Georgia
B.B.A. 1954, University of Georgia
- Lewis Leo Bird, Jr., Florida
B.S. 1956, Tufts University
- Anton Durham Brees, Florida
Mus.B. 1958, University of Miami
- Clifford Eugene Carroll, Georgia
B.A. 1954, Mercer University
- Marvin Dale Coffland, California
B.A. 1958, University of California, Los Angeles
- Delbert Arthur Emerson, Jr., Washington
B.A. in P.E. 1955, University of Washington
- Richard Lansing Geer, Virginia
B.E. 1955, University of Southern California
- M.S. 1961, Air Force Institute of Technology
- Theodore Charles Heine, Jr., California
B.A. 1954, Cornell University
- M.A. 1960, Middlebury College
- Francis Louis Heyde, Texas
B.A. 1956, St. Edward's University, Texas
- Lloyd Kenneth Houchin, Illinois
B.S. in Ed. 1956, Southern Illinois University
- Charles Robert Johnson, Indiana
B.S. 1955, Ball State University
- Omund Alfred Leahy, Maryland
B.S. 1940, U.S. Military Academy
- Donald Richard Ley, Washington
Ed.B. 1953, Seattle University
- B.S. 1957, U.S. Military Academy
- David Henry Montplaisir, North Dakota
B.S. in B.A. 1960, Moorhead State College
- Lawrence Munsie, Jr., Ohio
B. Landscape Architecture 1956, Ohio State University
- B.S. in C.E. 1964, University of Texas
- Edwin Caryl Pittenger, Jr., Washington
B.S. 1955, University of Maryland
- M.B.A. 1957, Syracuse University
- Carl Madden Putnam, Jr., Alabama
B.S. 1961, Mississippi Southern College
- Hubert Olan Reynolds, Alabama
B.C.E. 1951, Auburn University
- John Wesley Sims, Jr., Michigan
B.A. 1955, Michigan State University
- Monroe Timothy Smith, Florida
B.Gen.Ed. 1966, Municipal University of Omaha
- Richard Homer Stableford, Michigan
B.A. in Ed. 1956, University of Michigan
- M.L.A. 1967, Johns Hopkins University
- Kenneth Earl Strack, Texas
B.Gen.Ed. 1961, Municipal University of Omaha
- Larry Newton Tibbetts, Alabama
B.A. 1956, DePauw University
- Jack Kenneth Walker, Louisiana
B.A. 1966, Syracuse University
- Edwin Stuart Warrell, Jr., Alabama
Ed.B. 1954, University of Miami
- Kenneth Vernon Williams, Texas
B.S. 1949, Trinity University

DOCTOR OF BUSINESS ADMINISTRATION

- Harlan Lon Cheney, Virginia
Business Administration
Dissertation: *An Empirical Analysis of the Ability of Major Investment Advisory Services to Forecast Common Stock Price Movements*
B.A. 1941, Yankton College
M.B.A. 1954, George Washington University
- Harry Bradley Keller, Pennsylvania
Business Administration
Dissertation: *Forecasting the Logistic Impact of Operational Decisions*
B.S. 1942, U.S. Naval Academy
Degree of Naval Engineer 1949, Massachusetts Institute of Technology
M.E.A. 1959, George Washington University

Hale Nuckolls Tongren, Virginia

Business Administration

Dissertation: *Income Characteristics of the Over-65 Age Group*

M.B.A. 1959, Harvard University

Joel Ellis Tumarkin, Maryland

Business Administration

Dissertation: *Statistical Cost Estimating Relationships for Building Construction Planning*

B.M.E. 1956, M.I.E. 1963, New York University

SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

BACHELOR OF ARTS

Richard Charles Ascarelli, Maryland

International Affairs

(With Distinction)

Arnold George Bellefontaine,

Massachusetts

International Affairs

Janet Louise Buntebart, Michigan

International Affairs

David LeRoy Cardwell, Pennsylvania

International Affairs

Elaine Claudia Eff, Maryland

International Affairs

Audrey Harriet Lieberman, New Jersey

Public Affairs

Barton Howard Loring, New York

International Affairs

Pamela Cecilia MacDonald, District of

Columbia

International Affairs

Lois Jean Merrifield, District of

Columbia

International Affairs

Kathryn Virginia Myers, Virginia

International Affairs

Daniel Anderson Per-Lee, Virginia

Public Affairs

Bernard James Peters, New York

Public Affairs

Richard John Pinkos, District of

Columbia

International Affairs

James Jon Scanlon, California

International Affairs

Nancy Ann Sullivan, New York

International Affairs

George Matthew Ward, Virginia

International Affairs

Lawrence E. Woodward II, California

Public Affairs

Thomas Alan Zuk, Maryland

International Affairs

MASTER OF ARTS

Suzette Celeste Ashby, Ohio

International Affairs

B.A. 1966, Barnard College

Muhittin Erol Caglarcan, Virginia

Economic Policy

B.B.A. 1964, George Washington

University

Charles William Dyke, Maryland

International Affairs

B.A. 1963, University of Southern

Mississippi

Edward William Gnehm, Jr., Georgia

International Affairs

B.A. 1966, George Washington

University

David Crane Halsted, Vermont

International Affairs

B.A. 1963, Dartmouth College

Thomas Roger Hammant, New York

International Affairs

B.A. 1967, George Washington

University

Judith Carole Johnson, West Virginia
International Affairs
B.A. 1967, Marietta College
David Jay Kallor, New York
International Affairs
B.A. 1965, Michigan State University
Stephen David Leightman, Pennsylvania
International Affairs
B.A. 1967, University of Pittsburgh
William James Megginson III, Mississippi
International Affairs
B.A. 1965, Mississippi College
John Robert Mueller, Louisiana
International Affairs
B.A. 1964, William Jewell College
William Perry Pendley, Wyoming
Public Affairs
B.A. 1967, George Washington
University

Harry Charles Reinl, Virginia
Economic Policy
B.S. 1953, Fordham University
Linda Kathryn Schilling, District of
Columbia
International Affairs
B.A. 1965, Carleton College
Neil Norman Seldman, District of
Columbia
International Affairs
B.S. 1966, Cornell University
Annette Marlene Szumaski, New Jersey
International Affairs
B.A. 1966, George Washington
University

MASTER OF SCIENCE IN INTERNATIONAL AFFAIRS

Lawrence Edward Adams, Texas
B.Gen.Ed. 1965, Municipal University
of Omaha
Roy Edward Adolfson, Virginia
B.A. in Govt. 1949, George
Washington University
James Alton Bacon, Delaware
B.S. 1951, U.S. Naval Academy
Harry Polk Ball, Rhode Island
B.S. 1947, U.S. Military Academy
Rex Webb Beasley, Jr., Virginia
B.S. 1946, U.S. Military Academy
Richard Gordon Beckner, Virginia
B.S. 1946, U.S. Military Academy
Harvey Jackson Beeton, Virginia
B.S. 1960, U.S. Naval Postgraduate
School
Harry Lamar Benson, Texas
B.S. 1964, U.S. Naval Postgraduate
School
Randall Kelly Billings, Florida
B.S. 1965, U.S. Naval Postgraduate
School
Don Howard Blanchard, California
B.S. in Mil.Sci. 1957, University
of Maryland
Ralph William Blanchard, Jr., Florida
B.A. 1951, Duke University
Melvin Dale Blixt, Rhode Island
B.A. 1951, Kearney State College
Charles Arthur Borg, New York
B.S. 1948, U.S. Military Academy
B.S. in F.S. 1955, Georgetown
University

Daniel Zurcher Boyd, Oregon
B.A. 1953, Dartmouth College
Morris Joseph Brady, Mississippi
B.Gen.Ed. 1962, Municipal University
of Omaha
John Nelson Brandenburg, New Mexico
B.S. 1951, Oklahoma State University
of Agriculture and Applied Science
Thomas Chapin Buell, Virginia
B.S. 1941, U.S. Naval Academy
M.S. 1949, U.S. Naval Postgraduate
School
Charles Franklin Bunnell, Virginia
B.A. 1947, Yale University
M.S. 1949, Boston University
Kelly Howard Burke, Jr., Rhode Island
B.S. 1952, Auburn University
James Earl Burkhalter, Virginia
B.Gen.Ed. 1964, Municipal University
of Omaha
John Lewis Butts, Florida
B.S. 1951, U.S. Naval Academy
Robyn Moore Campbell, Jr., California
B.S. 1956, San Diego State College
James Rowland Cannon, Delaware
B.S. 1956, U.S. Naval Academy
Albert Joseph Carneghi, Florida
B.S. 1945, U.S. Naval Academy
Grey Leroy Carter, Nebraska
B.Gen.Ed. 1964, Municipal University
of Omaha

- Herbert Truman Casey, Virginia
B.A. 1942, Stanford University
Industrial Administrator 1943, Harvard University
- Earl Lawrence Casner, Kansas
B.S. 1951, Oklahoma State University of Agriculture and Applied Science
- Jack Eugene Cayot, Georgia
B.S. 1952, Texas A&M University
- William Borden Cobb, Jr., District of Columbia
B.A. 1943, University of North Carolina at Chapel Hill
- Harry Leroy Cochran, Jr., Ohio
M.S. 1951, Ohio State University
- William George Collier, Virginia
B.S. 1955, U.S. Naval Academy
- Samuel Pancoast Comly, Rhode Island
B.S. 1958, U.S. Naval Academy
- Jeremiah Patrick Connors, New Jersey
B.A. 1956, Belmont Abbey College
- Charles Ermer Conrad, Maryland
B.S. in Mil.Sci. 1959, University of Maryland
M.B.A. 1962, Babson Institute of Business Administration
- Arthur Leo Consta, Maryland
B.S. in Mil.Sci. 1965, Municipal University of Omaha
- William Randolph Cooper, Nevada
B.S. 1952, Arizona State University
- Clifford Denton Corn, Virginia
B.S. in Mil.Sci. 1958, University of Maryland
- Lloyd Neale Cosby, Rhode Island
B.S. in Agri. 1955, University of Kentucky
- Don Edward Crawley, Oklahoma
B.S. in Ind.Ed. 1951, University of Oklahoma
- William Patterson Culhane, Oregon
B.S. in Ed. 1957, Southern Oregon College
- William Donald Curry, Jr., Alabama
B.S. 1950, U.S. Military Academy
- Bertram Holman Curwen, Jr., North Carolina
B.Naval Sci. 1946, College of the Holy Cross
- Shane Patrick Daniels, Ohio
B.S. 1958, U.S. Naval Academy
B.S.(Meteorology) 1965, U.S. Naval Postgraduate School
- Mike DeLeon, Texas
B.S. in C.E. 1949, Texas A&M University
- William Howard Dietrich, Pennsylvania
B.S. 1958, College of the Holy Cross
- John Edward Donohue, New Jersey
B.Gen.Ed. 1962, Municipal University of Omaha
- Harold Douglas Dortch, Jr., Rhode Island
B.S. 1958, University of Tennessee
- Lee Thomas Doyle, Ohio
B.S. 1948, U.S. Military Academy
M.A. 1961, University of Pennsylvania
- Henry Clay Duncan, Pennsylvania
B.B.A. 1961, University of Georgia
- Robert Walker Durfey, California
B.S. 1948, U.S. Coast Guard Academy
- Lincoln David Faurer, Pennsylvania
B.S. 1950, U.S. Military Academy
M.S. 1964, Rensselaer Polytechnic Institute
- Robert Livingston Ferrell, Tennessee
B.M.E. 1947, Auburn University
- Cyrus Falconer Fitton, Ohio
B.A. 1967, George Washington University
- Sylvester Robert Foley, Jr., Alabama
B.S. 1950, U.S. Naval Academy
- Alfred Noel Fowler, Alabama
B.S. 1948, St. Louis University
B.S.(Ae.E.) 1954, U.S. Naval Postgraduate School
- Ivan Rex Frey, Virginia
B.Gen.Ed. 1954, Municipal University of Omaha
- Edwin J. Friesen, Louisiana
B.S. 1963, U.S. Naval Postgraduate School
- John Lawrence From, Jr., Virginia
B.S. 1943, U.S. Naval Academy
- William Charles Fullilove, Alabama
B.S. 1944, U.S. Military Academy
- Robert William Gambino, Virginia
B.A. 1951, University of Virginia
- J.D. 1958, George Washington University
- William Victor Garcia, Rhode Island
B.A. 1952, Manhattan College
- Bruce Beebe Garlinghouse, Rhode Island
B.S. 1947, U.S. Naval Academy
- Marion Lee Gesling, Missouri
B.A. 1956, University of Missouri
- Paul John Gorey, Rhode Island
B.A. 1954, Providence College
- John William Gorn, Virginia
B.A. 1938, Ripon College
- LL.B. 1949, University of Michigan
- Horace Edward Graham, California
B.A. 1964, University of New Mexico

- Robert John Griffin, Alabama
B.A. 1960, Sacramento State College
- Thomas Norfleet Griffin, Jr., Rhode Island
B.S. 1956, U.S. Military Academy
- Laurence Hill Grimes, Jr., Florida
B.S. 1955, U.S. Naval Academy
- Norris Jay Hanks, Michigan
B.S. 1950, U.S. Naval Academy
M.S. in Ae.E. 1955, Air Force Institute of Technology
Professional Degree of Ae. and Astrn.E. 1963, University of Michigan
- Rodney Val Hansen, Nebraska
B.S. 1960, U.S. Naval Postgraduate School
- Edwin Eugene Hanson, Georgia
B.S. 1961, Georgia Institute of Technology
- Martin Earl Hardy, Rhode Island
B.S. 1950, U.S. Naval Academy
- William Daniel Hart, Rhode Island
B.A. 1950, M.A. 1951, Columbia University
- Don Martin Hartung, Virginia
B.S. 1954, Arizona State University
B.S. in Ae.E. 1964, Air Force Institute of Technology
- William Savage Hathaway, Rhode Island
B.Gen.Ed. 1961, Municipal University of Omaha
- Eugene Adams Hemley, Rhode Island
B.S. 1940, U.S. Naval Academy
- Eugene Baker Henry, Jr., Rhode Island
B.S. 1939, U.S. Naval Academy
- Philip Robert Holt, California
B.A. 1950, University of Chicago
- William Douglas Houser, Virginia
B.S. 1941, U.S. Naval Academy
- George Denny Hughes, Florida
B.S. 1942, U.S. Military Academy
M.B.A. 1950, Columbia University
- Eugene Earle Hustad, South Dakota
B.S. 1949, U.S. Military Academy
M.B.A. 1961, University of Chicago
- Edmund Wesley Ingle, Rhode Island
B.S. 1965, U.S. Naval Postgraduate School
- Earl Ingram, Virginia
B.S. in Mil.Sci. 1961, University of Maryland
- Ray Nelson Joens, Ohio
B.S. 1959, St. Ambrose College
- Eivind Herbert Johansen, Rhode Island
B.S. 1950, Texas A&M University
- Ian Jarvis Johnson, New York
B.A. 1950, Cornell University
- Joseph Henry Johnson, Jr., District of Columbia
B.S. 1950, Virginia Union University
B.Ch.E. 1952, New York University
- Mervin Roy Johnson, Minnesota
B.A. 1948, Winona State College
B.D. 1952, Bethel College and Seminary
- Curtis Fuller Jones, Maine
B.A. 1942, Bowdoin College
- James Lloyd Jones, California
B.S. 1963, Municipal University of Omaha
- Thomas Marshall Judd, Maryland
B.A. 1941, Princeton University
- Gerald Henry Kaffer, Jr., Rhode Island
B.S. 1955, U.S. Merchant Marine Academy
- Thomas Jack Keene, Rhode Island
B.S. 1961, University of Kansas
- Daniel Joseph Kershaw, Rhode Island
B.S. 1952, U.S. Naval Academy
- Edward Clyde Kicklighter, Georgia
Ph.B. 1953, Northwestern University
- William Edward Killoran, New York
B.S. 1965, Municipal University of Omaha
- Reubin Leroy Kingdon, Virginia
B.S. in Mil.Sci. 1966, University of Maryland
- Richard Shafik Kotite, Virginia
B.Gen.Ed. 1964, Municipal University of Omaha
- Herbert Brent Kuykendall, Mississippi
B.S. 1956, U.S. Naval Academy
- Derwin Taylor Lamb, Florida
B.S. in M.E. 1951, University of South Carolina
- Robert Joseph Lamoureux, Massachusetts
B.S. 1958, U.S. Naval Academy
- Donald Patrick Lanaghan, Iowa
B.A. 1950, University of Mississippi
- Charles Earl Larkin, Jr., Alabama
B.S. 1949, U.S. Coast Guard Academy
- Alexander Robb Larzelere, Rhode Island
B.S. 1958, U.S. Coast Guard Academy
- Roger Laureant Lecomte, Virginia
B.Gen.Ed. 1963, Municipal University of Omaha
- Robert Vernon Lee, Jr., New Jersey
B.S. 1946, U.S. Military Academy
M.S. 1962, University of Arizona

- J. C. Lewis, Alabama
B.S. 1957, Panhandle Agricultural and Mechanical College
- John Crowley Lippincott, Florida
B.S. in B.A. 1949, University of Florida
- Glenn Scott Lockhart, California
B.S. 1951, University of San Francisco
- Chester Henry Lohr, Indiana
B.S. in Ed. 1953, Miami University
- Robert Peter Lucas, New Jersey
B.S. 1958, State University of New York, Maritime College
- Robert Meredith Lucy, Missouri
B.S. 1947, U.S. Naval Academy
J.D. 1954, George Washington University
- Otis Clyde Lynn, Alabama
B.Gen.Ed. 1963, Municipal University of Omaha
- Ralph John Maglione, Jr., Maryland
B.A. 1964, University of Maryland
- William Henry James Manthorpe, Jr., Pennsylvania
B.S. 1955, U.S. Naval Academy
- Louis Brooks Martin, New York
B.S. 1951, U.S. Military Academy
- William Curtis Mateer, Alabama
B.S. 1948, Ohio State University
- Paul Wayne Maul, Alabama
B.A. 1950, Indiana University
- John Winn McEnery, Alabama
B.S. 1948, U.S. Military Academy
- John Rutherford McGiffert, Virginia
B.S. in Mil.Std. 1967, University of Maryland
- Alfred Scott McLaren, Connecticut
B.S. 1955, U.S. Naval Academy
- Philip Joseph McNamara, Massachusetts
B.S. in C.E. 1948, Northeastern University
- Richard Ellsworth Meese, Washington
B.S. 1958, University of Idaho
- Sinclair Lewis Melner, Nevada
B.S. 1949, University of Nevada
- Richard Edwin Merkling, California
B.S. 1950, University of California, Los Angeles
- Edward Humphrey Monroe, Jr., Florida
B.A. 1952, University of the South
- Clarence Leon Montgomery, Jr., Louisiana
B.A. 1949, Louisiana State University
- Olin Joel Moore, Rhode Island
B.S. 1958, U.S. Military Academy
- John Campbell Morfit, Maryland
B.A. 1947, Duke University
- Daniel Joseph Morgiewicz, New York
B.A. 1966, George Washington University
- Davis O'Neill Morris, Virginia
B.S. in Mil.Std. 1962, University of Maryland
- Thomas Arnot Mort, Virginia
B.S. in B.A. 1957, Babson Institute of Business Administration
- Karl Renold Morton, Ohio
B.Gen.Ed. 1963, Municipal University of Omaha
- William James Mulcahy, Illinois
B.S. 1953, Northern Illinois University
- Edward Lloyd Murphy, Oklahoma
B.A. 1949, Oklahoma State University of Agriculture and Applied Science
- M.A. 1967, University of Wisconsin
- Donald Thomas Nelson, Jr., Virginia
B.S. 1945, U.S. Military Academy
- Glenn Walter Nelson, Virginia
B.S. in Ed. 1947, University of Nebraska
- Warren Granville Nelson, Iowa
B.S. 1953, Morningside College
- Noah Carroll New, Georgia
B.Ae.E. 1949, M.S. in Ae.E. 1950, Georgia Institute of Technology
- D.Sc. 1963, Massachusetts Institute of Technology
- William Edward Nyce, Pennsylvania
B.A. 1951, University of Louisville
- Frederic Louis Nystrom, Florida
B.A. 1953, University of Minnesota
- Edmund William O'Callaghan, Virginia
B.S. 1946, U.S. Naval Academy
- David Edgar Oleson, Wisconsin
B.S. 1954, University of Wisconsin
- Thomas Richard Olsen, Texas
B.S. in M.E. 1956, Texas A&M University
- Frederick Mauger O'Neill, Pennsylvania
B.A. 1937, Pennsylvania State University
- Richard Eugene Ong, California
B.S. 1957, Oregon State University
- Edward Joseph O'Shaughnessy, Virginia
B.S. 1943, College of the Holy Cross
- M.D. 1945, St. Louis University
- M.S. 1952, University of Minnesota
- Harvey Scott Parrish, Jr., Florida
B.S. 1945, U.S. Naval Academy

- Lowell Edward Perry, Florida
B.S. 1963, U.S. Naval Postgraduate School
- Wade Jefferson Pharis, Mississippi
B.S. 1957, University of Mississippi
- Aloysius Joseph Pickert, Jr., Rhode Island
B.S. 1946, U.S. Naval Academy
- Donald Dean Pizinger, Kansas
B.S. 1958, University of Kansas
- M.S. 1965, U.S. Naval Postgraduate School
- Kenneth Albert Plant, Maryland
B.A. 1950, Brown University
- Benjamin Lewis Poe, Jr., West Virginia
B.S. 1956, U.S. Naval Academy
- Alton Gustav Post, Virginia
B.Gen.Ed. 1961, Municipal University of Omaha
- John Charles Reed, Pennsylvania
B.S. 1949, U.S. Military Academy
- Stuart Vahlcamp Reynolds, Florida
B.S. 1953, University of Nebraska
- Everest Ernest Riccioni, Minnesota
B.S. 1948, M.S. 1949, University of Minnesota
- Horace Bascomb Robertson, Jr., North Carolina
B.S. 1945, U.S. Naval Academy
- LL.B. 1953, Georgetown University
- Robert Burnett Rogers, Pennsylvania
B.S. 1954, U.S. Naval Academy
- Gerald Frederick Ryan, Illinois
B.S. 1955, University of Maryland
- Thomas Martin Ryan, Jr., Michigan
B.Gen.Ed. 1965, Municipal University of Omaha
- Clement Godfrey Scerback, Maryland
B.A. 1949, Kent State University
- Andrew LeRoy Schalbrack, Wisconsin
B.S. 1964, University of Maryland
- Richard Howard Schoeneman, New Mexico
B.S. 1949, U.S. Military Academy
- William Max Schoning, Virginia
B.A. 1948, University of Washington
- Eugene Dyer Scott, Rhode Island
B.A. 1948, University of the South
- Charles Hilarian Senn, North Dakota
B.S. 1955, U.S. Naval Academy
- Larry King Simmering, California
B.S. 1955, University of California, Los Angeles
- B.A. 1963, University of Minnesota
- Robert Treat Shultz, California
B.S. 1950, U.S. Naval Academy
- Joseph John Skaff, Rhode Island
B.S. 1955, U.S. Military Academy
- Vladimir Walter Skuby, Virginia
B.S. in Mil.Std. 1964, University of Maryland
- John Archibald Smith, Ohio
B.A. 1944, Otterbein College
- Wilfrid King Grover Smith, Virginia
B.Gen.Ed. 1964, Municipal University of Omaha
- Henry Jerome Stachowski, Alabama
B.S. 1951, University of Illinois
- Hilton Leroy Stanley, Alabama
B.S. 1946, U.S. Naval Academy
- Philip Weddle Strobe, Montana
B.A. 1950, LL.B. 1958, University of Montana
- Don Michel Sullivan, Alabama
B.S. 1961, U.S. Naval Postgraduate School
- Lee Eli Surut, District of Columbia
B.S. 1949, U.S. Military Academy
- M.A. 1954, Columbia University
- Hjalmer Eugene Swanson, North Dakota
B.A. 1967, George Washington University
- Jesse Warren Taft, Virginia
B.S. 1945, University of Southern California
- George Marvin Thrailkill, Mississippi
B.S. 1957, Mississippi State University
- Marion Albert Tigert, Maryland
B.S. 1962, University of Maryland
- Joseph Ernest Trojan, Texas
B.Gen.Ed. 1962, Municipal University of Omaha
- James Marshall Vail, South Carolina
B.S. in Mil.Std. 1961, University of Maryland
- Robert Armes Van Arsdall, Rhode Island
B.S. 1948, U.S. Military Academy
- Ben Lee Walton, Texas
B.Gen.Ed. 1961, Municipal University of Omaha
- Dale Laverne Ward, Kansas
B.S. 1962, University of Maryland
- Eugene Conrad Watkins, Colorado
B.A. 1949, University of Colorado
- John Scholto Wieringa, Jr., Virginia
B.S. 1946, U.S. Military Academy
- Van Court Wilkins, Ohio
B.S. in Mil.Sci. 1959, University of Maryland
- M.B.A. 1963, George Washington University

Virgil Hughes Williams, Virginia
 B.A. 1958, University of Missouri
 Oliver Joseph Williford III, Illinois
 B.S. 1951, Virginia Military Institute
 John Ernst Wolter, Illinois
 B.S. in E.E. 1949, Purdue University

Robert Lloyd Yost, New York
 B.A. 1942, University of California,
 Los Angeles
 William Henry Young, Alabama
 B.S. 1965, University of Maryland
 George Michael Zaludek, Pennsylvania
 B.S. 1956, Pennsylvania State College,
 East Stroudsburg

Winter Convocation, February 22, 1969

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

Student Marshal: Susan Elizabeth McGuire

ASSOCIATE IN ARTS

George Walter Landau, District of
 Columbia

Susan Walsh Wenzel, Maryland

BACHELOR OF ARTS

David Altholz, New York
 Anthropology
 Hugh Mitchell April, District of Columbia
 Speech
 Julie Babcock, Vermont
 Religion
 Diana Jeanne Barnes, Virginia
 Anthropology
 Daniel Rucker Batigne, Pennsylvania
 Mathematics
 Stephanie Jocelyn Beard, District of
 Columbia
 Art History and Theory
 Wendy Marie Blum, New York
 Dramatic Art
 Claudia Mae Bonnist, New York
 Fine Arts
 Kathleen Baird Branigan, District of
 Columbia
 Fine Arts
 Carolyn Braunlich, District of Columbia
 Anthropology
 Joan Lynn Burgner, New Jersey
 Sociology
 Nivaldo Catapano, Virginia
 Sociology
 Donald Anthony Chendorain,
 Pennsylvania
 Social Sciences
 Rhoda Ann Ciocci, District of Columbia
 Psychology

Elisabeth Pierce Clarkson, Virginia
 Social Sciences
 Ellen Phillips Colness, Virginia
 English Literature
 (With Distinction, Special Honors)
 David Lee Cotton, Virginia
 Social Sciences
 Jennie Levkoff DeScherer, District of
 Columbia
 Art History and Theory
 Mary Virginia De Simone, Virginia
 History
 Margaret Loomis Dooling, District of
 Columbia
 Psychology
 Ann Louise Dynes, District of Columbia
 Art History and Theory
 Anne Jeffries Easley, Tennessee
 Speech Pathology and Audiology
 Sidney Edelman, Virginia
 Social Sciences
 Mack Emsellem, District of Columbia
 American Thought and Civilization
 Patricia Anne Evans, District of Columbia
 Sociology
 Roger Jamison Finch, Virginia
 Mathematical Statistics
 Patricia Anne Gearhart, Virginia
 Psychology
 Louise Diane Goldberg, Maryland
 Art History and Theory

- Susanne Lorene Gregory, District of
Columbia
Sociology
 Nancy Lee Grover, New York
Political Science
 Lynelle Kenwood Harder, Maryland
Art History and Theory
 Susan Diane Harding, District of
Columbia
English Literature
 Eugene Frank Hastings, Virginia
Social Sciences
 Kenneth David Heisler, District of
Columbia
Geography
 Sally Lou Hess, West Virginia
French Language and Literature
 Hugh Heefner Howard, Virginia
Psychology
 Deborah Guy Hubbard, Massachusetts
Religion
 Wynne Sumner Hyatt, Maryland
Mathematics
 Jean Lisa Jorgenson, District of Columbia
Geography
 Jane Elizabeth Kamps, Wisconsin
History
 Shirley Massell Kaufman, Maryland
Sociology
 William Mark Kincaide, Virginia
Germanic Languages and Literatures
 Karen McCray Kroesen, New Jersey
Fine Arts
 Lois Ellen Kullen, Massachusetts
Political Science
 Andrea Heller Laufer, District of
Columbia
Speech Pathology and Audiology
(Special Honors)
 Karen Brinckerhoff Lerner, District of
Columbia
Sociology (With Distinction)
 Thaddeus Frederick Levandowski,
Maryland
Social Sciences
 Ellen Faye Lichtenstein, New York
Speech Pathology and Audiology
 Charles Stephan Lima, Virginia
Political Science
 Janet May Lipkin, Massachusetts
Russian Language and Literature
(With Distinction)
 Beverly Sedgwick Lomas, Connecticut
Sociology
 Diana Elizabeth Lord, Virginia
Psychology
 Martin Joseph Lukoskie, Jr., Virginia
Anthropology
 Kevin John MacDonald, Maryland
Fine Arts
 Robert Frank Mallory, Colorado
Social Sciences
 Margaret Blackwell Mann, Maryland
Political Science
 Samuel John Marra, Maryland
Social Sciences
 E. David Marwick, Maryland
Economics
 Heather Lorraine Mason, District of
Columbia
English Literature
 Judith Ellen Mason, Virginia
History
 Natalie Grace McCarron, Pennsylvania
Sociology
 Mary Ann McFarland, Virginia
Art History and Theory
 Susan Elizabeth McGuire, Virginia
History (With Distinction)
 Patricia Elizabeth McMahon, Maryland
English Literature
 Mary Rankin Meade, Virginia
Fine Arts
 Naomi Linda Moglever, Maryland
Fine Arts
 Christopher Naab, District of Columbia
Political Science
 Toni Narins, New York
Fine Arts
 Jeffrey Robert Newhall, District of
Columbia
Political Science
 Wendy Beth Newman, New York
American Thought and Civilization
 Peggy Louise O'Connor, California
History
 Joanna Leigh Oliver, Maryland
Sociology
 Barbara Olivia Olson, Pennsylvania
English Literature
 Robert Joseph Ondek, Virginia
Mathematics and Physical Sciences
 Cynthia Barbara Parks, District of
Columbia
American Thought and Civilization
 Patricia Gail Peret, Maryland
Dramatic Art
 Marian Elizabeth Price, District of
Columbia
English Literature

Farhad Hassan Qadir, Lebanon
English Literature
David Lamont Quinn, District of
Columbia
Philosophy
Daniel Lee Rakes, Virginia
Social Sciences
Charles Benson Raper, Virginia
Social Sciences
(With Distinction)
Barry Rathner, Maryland
Economics
Edward Walter Ravitsky, Virginia
Natural Sciences
Frances Dorothy Ribowsky, New York
Sociology
Gary Wayne Richardson, Connecticut
Psychology
Robert Hoke Robinson, Jr.,
South Carolina
Philosophy
Biena Rubinstein, Maryland
Psychology
Douglas Fremont Sanford, South Carolina
Social Sciences
Joyce Gitlin Sartwell, District of Columbia
Anthropology
Patricia Ann Schiano, District of
Columbia
Political Science

Lois Eve Schulhofer, District of Columbia
English Literature
David Joel Segal, New Jersey
History
Anne Lanning Smith, Pennsylvania
Political Science
Sandra Lee Smith, Virginia
History
Donna Marie Spicer, Virginia
Sociology
Martin John Stack, Washington
Social Sciences
Laurie Jo Steinberg, New York
Sociology
Rosalie Stone, Connecticut
Anthropology
William Livingston Stone, Virginia
Anthropology
James Francis Swentek, Maryland
History
Elizabeth Machen Tallichet, Virginia
Natural Sciences
Irene Esther Tritter, Maryland
Psychology
Leslie Ellen Vincent, Maine
Dramatic Art
Geoffrey Judd Vitt, Ohio
History
Eileen Clare Wolff, District of Columbia
History

BACHELOR OF SCIENCE

Lisa Courtis, Virginia
Zoology
Gayle Ellen Jensen, Virginia
Zoology

Elliott Cedric Spiker, Virginia
Geology

BACHELOR OF SCIENCE IN GENERAL STUDIES

Francis Taylor Brown, Virginia
Political Science
Richard Joseph Coad, California
Political Science
George William Fromknecht, Virginia
Political Science

Patricia Ann Hill, District of Columbia
Political Science
Joseph Matthew Schneiders, Virginia
Political Science
Jack Elwood Waits, Virginia
Political Science

BACHELOR OF SCIENCE IN GEODETIC AND CARTOGRAPHIC SCIENCE

Arthur Conrad Flood, District of
Columbia
Cartography

GRADUATE SCHOOL OF ARTS AND SCIENCES

MASTER OF ARTS

- Harriet Brown Baldwin, District of Columbia
History
B.A. 1945, Wellesley College
- Janetta Rebold Benowitz, Virginia
Art History and Criticism
B.F.A. 1967, Cornell University
- Shirley Jeanne Blanchard, Virginia
Psychology
B.A. 1966, Wake Forest University
- Charles Vincent Boykin, Virginia
Economics
B.A. 1966, George Washington University
- Laura Adele Broedling, California
Psychology
B.A. 1967, Pembroke College
- Chester Church Buckenmaier, Jr., Pennsylvania
Psychology
B.S. 1959, Pennsylvania State University
- Johnetta Garner Davis, District of Columbia
Speech Pathology and Audiology
B.S. 1961, D.C. Teachers College
- Terence Allan Gerace, Pennsylvania
Psychology
B.A. 1964, Ed. M. 1966, State University of New York at Buffalo
- James Seton Gray, Jr., District of Columbia
Political Science
B.S. 1936, U.S. Naval Academy
M.B.A. 1963, George Washington University
- Thomas Daryl Hawkins, Maryland
Psychology
B.S. 1964, University of Maryland
- Joel Barber Hincks, Maryland
Economics
B.A. in Govt. 1965, George Washington University
- Ann Hightower Hughes, District of Columbia
Economics
B.A. 1962, George Washington University
- Wallace Schoonmaker Hutcheon, Jr., Virginia
History
B.S. 1954, Pennsylvania State University
- Solveig Hegre Ingersoll, Virginia
Speech Pathology and Audiology
B.A. 1967, George Washington University
- Robert John Jacques, Ohio
Economics
B.A. 1966, Ohio Wesleyan University
- James Joseph Jernee, New Jersey
Political Science
B.A. 1967, Rutgers, the State University
- Rosemary Nothdurft Killam, Maryland
Music Theory
Mus.B. 1960, University of Rochester
- Shozo Koyama, Japan
Economics
B.Econ. 1959, University of Tokyo, Japan
- Jane Helen Krieger, New York
Political Science
B.A. 1967, Brooklyn College
- Livia Teresa Limarzi, Maryland
Economics
B.A. 1962, Trinity College, D.C.
- Harlan Wentworth Loomis, Virginia
Mathematics
B.A. 1965, Princeton University
- Kenneth Alan McLean, Virginia
Economics
B.A. 1956, University of Iowa
- Martha Morris, District of Columbia
Museology
B.A. 1966, George Washington University
- Suzanne Siegmund Nessel, Virginia
Art History and Criticism
B.A. 1964, DePauw University
- Mary Kent Norton, Virginia
Spanish Language and Literature
B.A. 1944, Connecticut College
- David Milton Powell, Maryland
Psychology
B.A. 1963, Oberlin College
- Willie Oldham Quade, Virginia
Art History and Criticism
B.A. 1965, George Washington University
- Judy Ellen Rodgers, Illinois
Art History and Criticism
B.A. 1965, Mount Holyoke College

Mary Alice Sands, Virginia
Spanish Language and Literature
B.A. 1964, Juniata College
Corliss Sue Scheremeta, New York
Political Science
B.A. 1967, Trinity College, D.C.
David Silberman, Maryland
Psychology
B.S. 1928, University of Pennsylvania

Mary-Ellen Stein, Maryland
Speech Pathology and Audiology
B.A. 1964, University of Maryland
Edythe Taylor Sweeney, District of
Columbia
Psychology
B.A. 1946, University of Pennsylvania
Stephen Russell Woodzell, Jr., Virginia
History
B.A. 1963, Randolph-Macon College

MASTER OF SCIENCE

Madonna Ellis Browne, Maine
Microbiology
B.S. 1964, Duke University
Jessie Carleton Dickens, Virginia
Biology
B.A. 1939, George Washington
University
Lala Mathers Dunbar, Mississippi
Biochemistry
B.S. 1954, George Washington
University
Charles Michael Hoffman, Maryland
Chemistry
B.S. 1963, George Washington
University
James Walter Hogue III, New York
Chemistry
B.S. 1964, George Washington
University

Muhammad Hussain, Pakistan
Applied Statistics
B.A. 1960, M.A. 1962, University of
the Panjab, Pakistan
David Wayne McCandless, Maryland
Anatomy
B.S. 1967, University of Cincinnati
Kenneth Fred McCarthy, Virginia
Biochemistry
B.S. 1965, Pennsylvania State University
Susan Morrison Sieber, District of
Columbia
Pharmacology
B.S. 1964, Mary Washington College
of the University of Virginia

MASTER OF FINE ARTS

Raúl Acevedo Montalvo, Puerto Rico
Painting
B.A. 1964, University of Puerto Rico
Pauline Robinson Dove, District of
Columbia
Painting
B.A. 1965, Mary Baldwin College
Laryssa Luhovy Jerome, District of
Columbia
Painting
B.A. 1965, Ecole des Beaux-Arts,
Canada

Robert William Newmann, District of
Columbia
Painting
B.F.A. 1965, Rochester Institute of
Technology
M.A. 1967, University of Iowa
Elizabeth Forrest Somma, Virginia
Graphics
B.F.A. 1956, Richmond Professional
Institute

DOCTOR OF PHILOSOPHY

- Jerry Lee Alderman, Florida
 Physics
 Dissertation: *Geometry in the Intrinsic Space of Strongly Interacting Particles*
 B.S. 1961, University of Florida
 M.S. 1963, University of Washington
- Calvin George Aulisio, Maryland
 Microbiology
 Dissertation: *Usefulness of a New Serological Test for Monitoring the Occurrence of Certain Avian Microbial Diseases Without the Use of Serum*
 B.S. 1948, University of Scranton
 M.S.E. 1949, University of Notre Dame
- William Robert Belmont, Illinois
 Economics
 Dissertation: *A Timing Test of the Wage Cost-Push Inflation Hypothesis*
 B.A. 1952, DePaul University
 M.A. 1954, George Washington University
- Susan Ellmann Birnbaum, Virginia
 Microbiology
 Dissertation: *A Comparison of the Immunochemistry of Polysaccharides from Mycobacterium Tuberculosis and the Atypical Mycobacteria*
 B.A. 1951, Wellesley College
 M.S. 1952, George Washington University
- Clyde George Dease, District of Columbia
 Physics
 Dissertation: *Some Aspects of Electrodynamics in Heisenberg-Pauli Gauge*
 B.S. 1961, Purdue University
 M.S. 1962, University of Michigan
- John Raymond DeMember, Ohio
 Chemistry
 Dissertation: *Intramolecular Energy Transfer Study on Model Compounds with Nonconjugated Chromophores Rigidly Connected to an Inflexible Molecular Frame*
 B.S. 1964, Niagara University
- Barnett Denton, Maryland
 Psychology
 Dissertation: *An Investigation of the Dimensions of Communism, Socialism, and Capitalism from a Semantic Viewpoint*
 B.A. 1957, Hamilton College
 M.A. 1960, Syracuse University
- Peter Enis, New York
 Mathematical Statistics
 Dissertation: *Bayesian Applications to Discrimination and Estimation of the Probability that One Random Variable Exceeds Another*
 B.A. 1962, M.A. 1964, George Washington University
- Jeremiah Nicholas Fusco, Virginia
 History
 Dissertation: *Diplomatic Relations Between Italy and the United States, 1913-1917*
 B.A. 1935, Columbia University
 M.A. 1959, George Washington University

- John Duncan Gassaway, District of Columbia
 Geochemistry
 Dissertation: *Mineralogy and Geochemistry of the Sediments from the Straits of Florida*
 B.S. 1956, Georgetown University
 M.S. 1961, George Washington University
- Susan Carroll Gasster, Washington
 French Language and Literature
 Dissertation: *Point of View in the Novels of Zola, Galdós, Dostoyevsky, and Tolstoy: A Study in the Development of the Novel*
 B.S. 1961, Georgetown University
- James Edward Goodson, Pennsylvania
 Psychology
 Dissertation: *Optokinetic Responses in the Pigeon*
 B.A. 1955, M.A. 1956, Baylor University
- Elizabeth Mathis James, Maryland
 Political Science
 Dissertation: *State Department Adaptation to Independent Africa, 1952-1962: A Study in Thought and Practice*
 B.A. 1958, Rutgers, the State University
 M.A. 1959, Northwestern University
- Charles Robert Kemble, New York
 American Civilization
 Dissertation: *The Image of the Army Officer: The Nineteenth Century Background*
 B.S. 1949, U.S. Military Academy
 M.A. 1955, University of Pennsylvania
- Lynn Gresham Llewellyn, Pennsylvania
 Psychology
 Dissertation: *The Ultraconservative and the Mainstream Press: A Comparative Analysis*
 B.S. 1957, College of William and Mary
 M.A. 1959, George Washington University
- Ruth Logue, District of Columbia
 Economics
 Dissertation: *Imported Inflation and the International Adjustment Process*
 B.S. 1943, Radcliffe College
 M.A. in Govt. 1956, George Washington University
- George Oscar McClary, Virginia
 Psychology
 Dissertation: *Cognitive and Affective Responses by Negro and White Children to Pictorial Stimuli*
 B.A. 1949, University of Richmond
 M.S. 1954, Pennsylvania State University
- James Townsend Myera, South Carolina
 Political Science
 Dissertation: *The Apotheosis of Chairman Mao: Dynamics of the Hero Cult in the Chinese System, 1949-1967*
 B.A. 1963, M.A. 1964, University of Washington
- Robert Donald Nye, Virginia
 Psychology
 Dissertation: *Authoritarianism and the Formation and Change of Impressions*
 B.A. 1963, George Washington University

Martha Query Odell, Maryland

Psychology

Dissertation: *Sex Differences in the Relationship between Anxiety and Need for Achievement and in the Relationship between Anxiety and Need for Affiliation*

B.A. 1949, Sweet Briar College

Margaret Magrath Reuss, Wisconsin

Economics

Dissertation: *National Debt Instruments and Monetary Control*

B.A. 1942, Bryn Mawr College

M.A. 1950, University of Chicago

Abigail Ann Salyers, Maryland

Physics

Dissertation: *Analysis of Reactions Involving Three Particle Final States*

B.A. 1963, George Washington University

Clyde Stevan Schwartz, Virginia

Pharmacology

Dissertation: *Studies on Salicylate in Bacteria*

B.A. 1958, Washington University

M.A. 1962, Southern Illinois University

Leon David Shargel, Maryland

Pharmacology

Dissertation: *Influence of Electron Carrier Systems in Microsomal Metabolism of Drugs*

B.S. in Phar. 1963, University of Maryland

Maung Hla Way, Burma

Chemistry

Dissertation: *Photochemistry of Cobalt(III) Complexes*

B.S. 1955, University of Rangoon, Burma

M.S. 1964, Indiana University

John Edward Westfall, California

Geography

Dissertation: *The Geographical Estimation of Classical Population Numbers*

B.A. 1960, University of California, Berkeley

M.A. 1964, George Washington University

Dana Francis White, New York

American Civilization

Dissertation: *The Self-Conscious City: A Survey and Bibliographical Summary of Periodical Literature on American Urban Themes, 1865-1900*

B.S. 1956, Fordham University

M.A. 1957, University of Wyoming

Carol Faye Whitfield, Pennsylvania

Physiology

Dissertation: *Estrogen Effects on Histamine and Cations during Magnesium Deficiency*

B.S. 1961, Juniata College

M.S. 1964, Syracuse University

Martin Lee Wiley, Maryland

Zoology

Dissertation: *Comparative Morphology and Histology of Nuptial Tubercles in Fishes*

B.S. 1959, M.S. 1960, Kansas State College of Pittsburg

NATIONAL LAW CENTER

Student Marshal: James Francis Meade

JURIS DOCTOR

- Bruce Leonard Adams, New Jersey
B.S. 1965, Newark College of Engineering
- Robert Montague Adams III, Maryland
B.A. 1966, Gettysburg College
- Michael William Beavers, District of Columbia
B.A. 1966, Washington and Jefferson College
- Dorothy Beling, Maryland
B.A. 1951, Smith College
- Peyton Boswell III, Virginia
B.A. 1962, Lehigh University
- Patrick Francis Bright, Virginia
(With Honors)
B.S. 1965, Georgetown University
- Dennis Eric Codlin, Maryland
B.A. 1966, Miami University
- Ronald Dennis Cohn, Maryland
(With Honors)
B.S. 1965, University of Illinois
- Stephen Richard Creyke, Maryland
B.F.A. 1963, Carnegie-Mellon University
- James Edwin Dietel, District of Columbia
B.S. 1964, Southern Methodist University
- Troy Gene Dillahunt, Virginia
B.S. in Ch.E. 1965, Oklahoma State University of Agriculture and Applied Science
- Seymour DuBow, Virginia
B.A. 1965, Northwestern University
- George Chamberlain Duncan, Virginia
B.S. 1939, U.S. Naval Academy
M.S. 1947, Massachusetts Institute of Technology
- Gerald Myer Fisher, Maryland
(With Honors)
B.S. 1958, Drexel Institute of Technology
- John Joseph Geraghty, Virginia
(With Honors)
B.A. 1957, S.T.B. 1959, St. Mary's Seminary and University
- Roger Milton Gregory, Jr., Maryland
(With Honors)
B.S. 1947, U.S. Naval Academy
- Donald Bernard Hordes, Maryland
(With Honors)
B.A. 1966, University of Maryland
- Curtis Jay Karpel, Maryland
B.A. 1966, American University
- Peter James Lynn, Maryland
B.A. 1966, Yale University
- George Allison Marshall, Maryland
B.A. 1962, Hamline University
- James Francis Meade, New York
(With Honors)
B.S. 1961, U.S. Coast Guard Academy
- Burdsall Dunham Miller, Virginia
(With Honors)
B.S. 1945, Albright College
M.S. 1952, Ohio State University
- Herbert Walter Mylius, Virginia
B.S. 1960, University of Rochester
- Neil Takeo Nakamura, District of Columbia
B.A. 1966, University of Hawaii
- Norman Fullmer Nilson, Virginia
B.S. 1965, University of Utah
- John Noble, Maryland
B.A. 1961, Juniata College
- John Orman, Virginia
B.I.E. 1963, University of Florida
- Max Richard Page, Virginia
(With Honors)
B.S. in Comm. 1965, Drexel Institute of Technology
- Lynne Joyce Pilot, Virginia
B.S. 1962, Miami University
- Angelo Salvatore Puglise, Virginia
B.S. 1959, University of Maryland
- Barbara Ann Purvis, California
B.A. 1963, University of California, Riverside
M.A. 1964, University of Washington
- James Patrick Schaller, Virginia
(With Honors)
B.A. 1965, King's College, Pa.
- Walter Charles Schlieman, Jr., New York
(With Honors)
B.A. 1961, Dartmouth College
- Ronald Jack Stern, Maryland
B.S. 1963, City College, New York

John Remon Wenzel, Maryland
(With Honors)
B.A. 1965, George Washington
University
Roger Clyde Wesley, California
B.S. 1962, M.A. 1966, University of
Southern California
Floyd William White, Jr., California
(With Honors)
B.S. 1959, U.S. Coast Guard Academy

Van Comfort Wilks, Virginia
(With Honors)
B.S. 1963, University of Missouri
Paul Francis Wille, Maryland
B.S. 1964, Le Moyne College, N.Y.
Geoffrey Nimmons Zeh, New Jersey
B.A. 1965, Rutgers, the State
University

MASTER OF LAWS

Richard Gaspare Amato, Maryland
B.A. 1964, Georgetown University
J.D. 1967, George Washington
University
Richard John Bednar, Nebraska
LL.B. 1954, Creighton University
Robert Bernard Bowytz, Maryland
B.S. 1959, Pennsylvania State
University
LL.B. 1962, University of Pittsburgh
Nicholas William Carlin, Virginia
B.S. 1958, J.D. 1967, University of
Louisville
Henry Crowell Chappell, Jr., Alabama
B.S. 1964, LL.B. 1965, University of
Alabama
Dharm Paul Singh Dhillon, Maryland
B.A. 1949, M.A. 1951, LL.B. 1954,
Panjab University, India
Joseph Michael Felton, Maryland
B.B.A. 1957, St. John's University,
N.Y.
LL.B. 1963, Georgetown University
Richard Joseph Gallagher, Maryland
Ph.B. 1937, College of the Holy Cross
LL.B. 1940, Harvard University
Arthur Charles Heise, Maryland
B.S. 1949, LL.B. 1952, University of
Maryland

Steven David Ivins, Virginia
B.S. 1959, LL.B. 1962, University of
Pennsylvania
Wouter Keesing, Maryland
B.A. 1964, Gettysburg College
J.D. 1967, Georgetown University
Robert Lewis Malech, Maryland
B.A. 1961, Cornell University
LL.B. 1964, Boston University
Joseph Hugh McGlynn, Virginia
B.M.E. 1962, LL.B. 1965, Villanova
University
James Franklin McGuirl, District of
Columbia
LL.B. 1965, DePaul University
John Marx Miller, West Virginia
B.A. 1959, LL.B. 1962, West Virginia
University
Edward Walter Somers, Maryland
B.E. 1953, M.S. 1955, Johns Hopkins
University
LL.B. 1967, George Washington
University
Robert Mitchell Steinbach, Virginia
B.B.A. 1962, Tulane University of
Louisiana
LL.B. 1965, Boston College

MASTER OF COMPARATIVE LAW

Dean Tie-Long Chiang, Taiwan
LL.B. 1966, National Cheng-Chi
University, Taiwan

Romulo Contreras Felizmeña, Virginia
LL.B. 1951, Ateneo De Manila,
Philippines

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

Student Marshal: William Thomas Packard

BACHELOR OF SCIENCE (Civil Engineering)

Ellis Ray McElroy, Maryland

Nicholas George Paleologos, District of Columbia

BACHELOR OF SCIENCE (Electrical Engineering)

Robert Frederick Barton, Virginia
Henry Werthan Franklin, Jr., Virginia
Joseph David Fretz II, Virginia

Joseph Peter Manzo, Jr., Virginia
Alan Joseph Rider, Virginia

BACHELOR OF SCIENCE (Mechanical Engineering)

John Vincent Chamberlin, Maryland
John Markley Curtis, Jr., Maryland
Jack William Evans, District of Columbia

Arthur Webster Lucas, Jr., Maryland
William Thomas Packard, New York

MASTER OF ENGINEERING ADMINISTRATION

William Augustus Altman, Maryland
B.S. in E.E. 1956, Norwich University
John Gerard Bohan, Maryland
B.S. 1961, Fordham University
William Merewether Brady, Virginia
B.C.E. 1964, University of Virginia
Richard William Burns, Maryland
B.E.E. 1960, Rensselaer Polytechnic Institute
M.S. in Engr. 1963, George Washington University
Clair Aloysius Craig, Maryland
B.E.E. 1952, Marquette University
James Raymond Cranston, Virginia
B.C.E. 1961, Catholic University of America
Robert Howard Evans, Virginia
B.S. 1953, U.S. Merchant Marine Academy
B.S. in M.E. 1957, University of Delaware
Archie Edward Floyd, Virginia
B.S. in C.E. 1947, B. Naval Science and Tactics, 1947, Purdue University
Bruce Mayer Fonoroff, Maryland
B.S. 1966, Case Western Reserve University
David Carlton Gardiner, Maryland
B.S. in E.E. 1963, North Carolina State University at Raleigh
B.A. 1964, Belmont Abbey College

Howard Burt Hiester, Maryland
B.S. 1955, Muskingum College
M.S. 1958, Iowa State University of Science and Technology
David Kenneth Holman, Virginia
B.S. 1959, Tufts University
William Charles Lohnes, Maryland
B.S. 1960, Loyola College
Thomas Channing Lutton, Maryland
B.S. 1955, U.S. Coast Guard Academy
B.S. in E.E. 1965, U.S. Naval Postgraduate School
Paul Austin McAdam, Massachusetts
B.S. in M.E. 1964, University of Massachusetts
Edward Homewood Miller, Maryland
B.A. 1959, Florida State University
David Anthony Moore, Maryland
B.I.E. 1958, Georgia Institute of Technology
Francis Alfred O'Grady, Maryland
B.C.E. 1950, Clarkson College of Technology
Donald Allen Patrick, Michigan
B.S.E. 1944, University of Michigan
M.S. 1952, University of California, Berkeley

Harold Jackson Peake, Virginia
 B.S. in E.E. 1942, Virginia Polytechnic Institute
 M.S. in E.E. 1953, University of Maryland
 William Howard Perry, Maryland
 B.S. in E.E. 1963, North Carolina State University at Raleigh
 Ronald Lee Pollard, Illinois
 B.S. in Ch.E. 1955, Newark College of Engineering
 Ronald Duncan Rosie, Maryland
 B.S. 1958, U.S. Coast Guard Academy
 B.C.E. 1963, Rensselaer Polytechnic Institute
 Dennis Gerald Samson, Virginia
 B.S. in Ae.E., B.S. in Bus. 1957, University of Colorado
 Ronald Allan Schnepfer, Virginia
 B.S. 1958, U.S. Naval Academy

Henry A. Sindt, Maryland
 B.Ch.E. 1960, City College, New York
 Manohar Singh, Virginia
 B.S. in C.E. 1953, University of Rangoon, Burma
 Raymond Michael Smith, Maryland
 B.E. 1963, Youngstown University
 Ronald Peter Suriano, Michigan
 B.M.E. 1960, University of Detroit
 David George Sweet, Virginia
 B.S. 1964, University of Connecticut
 Stanley Jacob Tepper, Maryland
 B.E.E. 1951, Rensselaer Polytechnic Institute
 Edgar Aime Thibault, Virginia
 B.S. in M.E. 1962, Tufts University
 Lauren Preston Tuttle, Jr., Virginia
 B.E.E. 1957, University of Florida

MASTER OF SCIENCE

Richard John Baka, Maryland
 B.S. in E.E. 1961, Lehigh University
 Donald Brooks Baldwin, Virginia
 B.C.E. 1957, University of Louisville
 Dimitri Pantelis Bertsekas, Virginia
 Diploma 1965, National Technical University of Athens, Greece
 Charles Dean Bradley, Maryland
 B.S. in E.E. 1964, Drexel Institute of Technology
 Hugh Albert Crisp, Virginia
 B.S. in Mining Engr. 1955, Washington State University
 M.S. in Petroleum Engr. 1963, University of Texas
 Richard Hugh Daumit, Maryland
 B.E.E. 1962, Catholic University of America
 Oleg Efremov, Virginia
 B.S. 1957, Columbia University
 Chester Ellsworth Fox, Jr., District of Columbia
 B.S. in E.E. 1962, University of Maryland
 Harold LaRoy Hughes, District of Columbia
 B.S. 1960, Pennsylvania State University
 Daniel Wallace Kelliher, Virginia
 B.S. in E.E. 1960, University of Maryland

Kalisankar Mallik, Virginia
 B.S. 1959, B.Tech. 1961, M.Tech. 1962, University of Calcutta, India
 Ralph Falkner McCay, Jr., Maryland
 B.E.E. 1966, Georgia Institute of Technology
 Richard Evans Metrey, Maryland
 B.M.E. 1961, Marquette University
 Jay Nido, Maryland
 B.S. in E.E. 1960, Pennsylvania State University
 Daniel Edward O'Connell, Jr., Maryland
 B.E.E. 1962, Catholic University of America
 William Stanley Prusch, Virginia
 B.S. 1962, University of Maryland
 Michel Constantino Saab, District of Columbia
 B.S. (C.E.) 1967, George Washington University
 Richard Thomas Shearer, Virginia
 B.S. in E.E. 1964, George Washington University
 Marvin Richard Wachs, Maryland
 B.E. 1965, City College, New York
 Charles Lynn Wayne, Maryland
 B.S. in E.E. 1964, Massachusetts Institute of Technology
 Ronald Frank Wonisch, Maryland
 B.S. in E.E. 1960, Purdue University

MASTER OF SCIENCE IN ENGINEERING

John Joseph Batluck, Virginia
 B.S. in E.E. 1961, Indiana Institute of Technology

Richard James Garey, Maryland
 B.S. in M.E. 1960, University of Maryland

DOCTOR OF SCIENCE

Charles Noel Adkins, Virginia

Fluid Mechanics

Dissertation: *Radiating Inviscid Flow behind a Paraboloidal Shock Wave*

B.S. in Engr. Physics 1957, University of Oklahoma

M.S. in Engr. 1963, George Washington University

Walter Gordon Heffron, Jr., Virginia

Control Systems

Dissertation: *A Guidance System for the Ascent of an Unmanned Martian Probe*

B.S. in E.E. 1947, Tulane University of Louisiana

M.S. in E.E. 1950, Purdue University

George Ellert James, District of Columbia

Electromagnetic Waves

Dissertation: *The Axial Current Induced in the Sheath of a Long Underground Telephone Cable by a Plane Electromagnetic Wave Propagating in the Atmosphere*

B.S. in E.E. 1940, University of Washington

M.S. in Engr. 1962, George Washington University

Oles Lomacky, Maryland

Theoretical and Applied Mechanics

Dissertation: *Stress Analysis of Thin Elasto-plastic Shells*

B.C.E. 1956, City College, New York

M.S. in Engr. 1963, George Washington University

Edward Morenoff, Maryland

Computer Science

Dissertation: *The Table Driven Augmented Programming Environment: A General Purpose User-Oriented Program for Extending the Capabilities of Computer Operating Systems*

B.A. 1956, B.S. in E.E. 1957, M.S. in E.E. 1958, Columbia University

SCHOOL OF EDUCATION

Student Marshal: Shirley Snyder Williams

BACHELOR OF ARTS IN EDUCATION

Michael John Benton, Virginia

Mathematics

Mary Ann Cantor, District of Columbia

English

Gordon Herman Hoffman, Maryland

Chemistry

Jean Taft Lesh, Indiana

Elementary Education

Julianne Davis McConnel, Virginia

Elementary Education

Eileen Agnes McCullough, New Jersey

English

Mona Marjorie Melanson, New York

Social Studies

Nora Margaret Simpson, Virginia
ArtJoAnne Margareuete Sims, Virginia
Elementary EducationKathleen Adams Sparks, Virginia
Elementary EducationSally Brabyn Wildanger, District of
Columbia

Elementary Education

Shirley Snyder Williams, Maryland
French (With Distinction)Janice Cheryl Wolf, New York
English

BACHELOR OF SCIENCE IN PHYSICAL EDUCATION

Jeffery Earl DeLong, Indiana

Charles Bradley King, Virginia

MASTER OF ARTS IN EDUCATION

Gregory Allen Adams, Maryland
Guidance

B.A. 1965, Yankton College

Jean Wilkerson Allen, District of
Columbia

Elementary Education

B.S. 1946, D.C. Teachers College

Ahmed Fathy Bahig, Virginia

Adult Education

B.A. 1940, Cairo University, Egypt

Barbara Poyner Beam, District of
Columbia

Elementary Education

B.S. 1958, D.C. Teachers College

Nellie May Bering, Virginia

Employee Training

B.S. 1949, College of William and Mary

Susan Verstandig Berman, Virginia

Elementary Education

B.S. 1967, Finch College

Judith Whitted Biagas, District of
Columbia

Special Education

B.S. 1959, Howard University

Violet Briscoe, District of Columbia

Elementary Administration

B.S. 1965, D.C. Teachers College

Loretta Bazemore Cherry, District of
Columbia

Secondary Administration

B.S. 1965, Virginia State College

James Dennis Cochran, Maryland

Secondary Administration

B.A. 1964, University of Maryland

Marjorie Jane Cohn, New York

Special Education

B.A. in Ed. 1967, George Washington

University

Patsy Louise Costolo, Virginia

Elementary Administration

B.A. 1951, Marietta College

Marilyn Carol Alicia Dodd, Maryland

Elementary Education

B.A. 1966, College of St. Elizabeth

John Edward Dougherty, Jr., Virginia

Secondary Education

B.S. 1954, U.S. Naval Academy

Elizabeth Marie Duffy, District of
Columbia

Adult Education

B.A. 1964, Arizona State University

Dorothy Savilla Duncan, Virginia

Secondary Administration

B.A. 1950, Brenau College

Joanne Felton Easterly, District of
Columbia

Elementary Administration

B.S. 1965, D.C. Teachers College

Jane Bernstein Friend, Maryland

Reading

B.A. 1952, Goucher College

Karen Beagle Frommer, Maryland

Special Education

B.S. in Ed. 1966, State University of

New York, College at Cortland

Michael Archibald Fryer, Maryland

Physical Education

B.P.E. 1964, Purdue University

Gale Bratton Gibson, Virginia

Adult Education

B.A. 1962, Randolph-Macon College

Harriet Clayton Harper, New Jersey

Special Education

B.S. 1966, Skidmore College

Elizabeth Sandholm Harrison, Maryland

Reading

B.A. 1961, Clark University

Aurilee Anne Hawley, Iowa

Secondary Education

B.A. 1966, University of Iowa

Elizabeth Ann Hill, District of Columbia

Elementary Administration

B.S. 1965, D.C. Teachers College

William Ray Hinely, District of Columbia

Elementary Education

B.A. 1959, George Washington

University

Christine Anita Holston, District of

Columbia

Elementary Administration

B.S. 1959, D.C. Teachers College

Martha Cralley Huntington, Maryland

Secondary Administration

B.S. in P.E. 1960, University of Illinois

Charles Henry Jackson, District of

Columbia

Elementary Administration

B.S. 1959, D.C. Teachers College

Jean Ambrose Kilmartin, Virginia

Adult Education

B.S. 1953, University of California, Los

Angeles

Vilma Louise Lee, District of Columbia

Elementary Administration

B.S. 1948, D.C. Teachers College

Janet Ruth Leman, District of Columbia

Elementary Education

B.S. 1942, Oregon State University

- Elaine Marie Lozier, Virginia
Student Personnel Work in Higher Education
B.S. 1965, Purdue University
- John Gray Marley, Maryland
Guidance
B.A. 1957, Atlantic Christian College
- John Patrick McCarthy, Virginia
Secondary Administration
B.S. in Ed. 1965, Mount St. Mary's College, Md.
- Judith-Ann McCray, District of Columbia
Adult Education
B.S. 1962, Columbia University
- Catherine Ellen McDonough, District of Columbia
Special Education
B.A. in Ed. 1964, Marywood College
- Laurence Edward Mindel, Maryland
Student Personnel Work in Higher Education
B.A. 1966, University of Wisconsin
- Katherine Leonard Nyce, Virginia
Elementary Education
B.A. 1960, University of North Carolina at Greensboro
- Stanley Gene Pitts, Maryland
Physical Education
B.S. 1961, University of Maryland
- Jane Ann Platt, Virginia
Reading
B.S. in Ed. 1964, Ball State University
- Pearl Ellis Prather, District of Columbia
Secondary Education
B.S. 1945, D.C. Teachers College
- George Oliver Rigby, Virginia
Secondary Education
B.S. in B.A. 1954, Norwich University
- Mary Louise Rinaldi, Maryland
Elementary Administration
Ed.B. 1956, University of Miami
- Victor Savoca, Maryland
Physical Education
Ed.B. 1963, University of Miami
- Beth Susan Schmetz, Maryland
Physical Education
B.S. in Ed. 1965, City College, New York
- Tommy Leroy Schwartz, Maryland
Secondary Administration
B.S. 1959, Pembroke State College
- Harry Mason Smith, Virginia
Physical Education
B.A. 1955, Glenville State College
- James Allen Sweatt, District of Columbia
Special Education
B.S. in Ed. 1948, Hampton Institute
- Robert Lee Thomas, Maryland
Secondary Administration
B.A. 1955, Bridgewater College
- JoAnne Thompson, Virginia
Special Education
B.A. 1965, M.A.T. 1966, George Washington University
- Frances Louise Vaughns, District of Columbia
Elementary Education
B.A. 1963, South Carolina State College
- John Albert Veltry, Maryland
Physical Education
B.S. 1958, Fairmont State College
- Joyce Lana Veneman, Maryland
Reading
B.S. in Ed. 1964, Maryland State College, Towson
- Evelyn Amuedo Wade, Virginia
Adult Education
B.A. 1964, American University
- Josephine Jung-Shan Wang, Maryland
Elementary Education
B.A. 1966, Queens College, N.Y.
- Mary Branch Washington, District of Columbia
Guidance
B.S. 1957, Bennett College, N.C.
- Elizabeth Louise White, District of Columbia
Elementary Administration
B.S. 1957, D.C. Teachers College
- Kathryn Ann Wilker, Maryland
Secondary Education
B.A. 1965, St. Olaf College
- Annie Mae Johnson Wooten, District of Columbia
Elementary Education
B.S. 1942, Agricultural and Technical College of North Carolina
- Anne Hupper Wright, Virginia
Guidance
B.A. 1964, Brown University

EDUCATION SPECIALIST

- James Owen Flanigan, Maryland
Adult Education
B.S. 1959, M.S. 1965, Oklahoma State University of Agriculture and Applied Science

ADVANCED PROFESSIONAL CERTIFICATE

Gertrude Wilkins Kerr, Virginia
 Elementary Education
 B.A. 1955, Lynchburg College
 M.A. in Ed. 1961, George Washington
 University

DOCTOR OF EDUCATION

- Robert Foust Bierly, Virginia
 Secondary Administration
 Dissertation: *District of Columbia Teachers' Needs and the Effect of Those Needs on the April, 1967, Voting for a Single Negotiation Agent*
 B.A. 1943, University of Maryland
 M.A. in Govt. 1959, George Washington University
- Jerry Marvin Cohen, Maryland
 Guidance and Counseling
 Dissertation: *A Study of the Validity of the Predictor Variables Used for Determining the Admission of Ninth Grade Students to the College Preparatory and Vocational-Technical Curricula in the Tenth Grade of the Baltimore City Public Schools*
 B.S. 1947, Loyola College
 Ed.M. 1950, University of Maryland
- Robert James Collins, Maryland
 Curriculum
 Dissertation: *The Relationship of the Services of the Instructional Materials Center and the Selection of Materials by Teachers and Children of Montgomery County, Maryland*
 B.A. 1949, Mount Union College
 M.A. 1950, George Peabody College for Teachers
- Herman Armstead Howard, Virginia
 Teacher Education
 Dissertation: *A Study of Selected Characteristics of Persistent and Nonpersistent Interns of the First Cycle of the Teacher Corps*
 B.A. 1954, Virginia Union University
 M.A. in Ed. 1961, George Washington University
- Norman Joseph Kerr, Virginia
 Secondary Administration
 Dissertation: *A Community Educational Power Structure*
 Ed.B. 1951, Rhode Island College
 M.A. in Ed. 1961, George Washington University
- Calvin Clinton Rubens, Maryland
 Teacher Education
 Dissertation: *A Descriptive Analysis of Teachers' Perception and Evaluation of Current Secondary School Programs in Office Occupations Education*
 B.S. 1950, Allen University
 M.A. 1954, New York University
- Donald Joseph Slowinski, Maryland
 Philosophy of Education
 Dissertation: *An Investigation of Some of the Implications of Educational Philosophy Relative to Change in Higher Education with Particular Attention to the Role of Students as Change Agents*
 B.S. 1957, Ed. M. 1963, Rutgers, the State University

Charles Isaac Wiles, Jr., Maryland

Administration and Supervision

Dissertation: *A Survey of Teacher Readiness as Determined by Attitudes and Academic Training for Outdoor Education in the Elementary Public Schools of Montgomery County, Maryland*

B.S. 1950, Ed.M. 1955, University of Maryland

SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION

Student Marshal: Jean Bowles

BACHELOR OF BUSINESS ADMINISTRATION

Victor Bernard Allen, California

Business Administration

Allen Robert Anderson, Virginia

Accounting

Michael James Augeri, Virginia

Business Administration

Vincent James Battista, Virginia

Business Administration

Bryant Harland Beasé, Massachusetts

Business Administration

Jean Bowles, Virginia

Accounting (Special Honors)

Lewis Joseph Bruss, New Jersey

Business Administration

Christopher Shattuck Cobb, Texas

International Business

James Edwin Cummins, Virginia

Business Administration

Dorothea Amelia Donaldson, New Jersey

Business Administration

Thomas Joseph Gmitter, Virginia

Business Administration

Leland Lewis Greene, New York

Business Administration

William Noble Hurt, Maryland

Business Administration

Thomas Lee Hurst, Maryland

Business Administration

Charles Eugene Kincaid, Jr., Virginia

Accounting

Dorothy Ching-Yin Ma, Hong Kong

Accounting

Albert Hurley Manus, Virginia

Accounting (With Distinction)

Robert Smith Morgan, Virginia

Business Administration

Robert Walcott Nagle, Rhode Island

Accounting

Carol Susan Naiman, Massachusetts

Business Administration

Diane Elizabeth Nevin, Virginia

Business Administration

James Faulkner Pinkney, Jr., Virginia

Business Administration

Allan Jay Ream, Virginia

International Business

Robert Eugene Russum, Virginia

Business Administration

Gail Ingrid Saunders, Virginia

Business Administration

Jacques Cesar Setton, France

International Business

Lance Stephen Shirley, District of

Columbia

Business Administration

Eric Francis Torsell, Virginia

Accounting (With Distinction)

B.S. 1962, Canisius College

BACHELOR OF SCIENCE IN GENERAL STUDIES

Waldo Alexander Atkins, Virginia

Business Administration

George Frederick Bean, Virginia

Business Administration

Ronald Raymond Bowden, California

Business Administration

Franklin Wood Carter, Missouri

Business Administration

Joseph Thomas Doyle, New York

Business Administration

Kenneth Louis Dragon, Virginia

Accounting

Marvin Lee Fitts, California
Business Administration
(With Distinction)

David Lee Hardin, California
Business Administration

William Robert Hess, Virginia
Business Administration

Eugene Thomas Hill, Virginia
Business Administration

Edward Joseph Lawrence, Virginia
Business Administration

John Lycas, Virginia
Business Administration

Richard Sherman McDaniel, Virginia
Business Administration

Herbert Alfred Northcutt, Virginia
Business Administration

John Palmer, Jr., Virginia
Business Administration

J W Perkins, Virginia
Business Administration

John Richard Price, Pennsylvania
Business Administration

Charles Layman Smith, Virginia
Business Administration

John Patrick Walsh, Jr., Maryland
Business Administration

MASTER OF BUSINESS ADMINISTRATION

Kadhim Ali Al-Eyd, District of Columbia
Accounting

B.S. 1963, University of Wisconsin

Lawrence Henry Brinks, Illinois
Business Administration

B.S. 1962, Quincy College

Lewellyn Alphonzo Brown, Kansas
Business Administration

B.B.A. 1962, City College, New York

James Francis Carlin, Jr., Maryland
Business Administration

B.S. 1960, Haverford College

M.S. in Metallurgy 1962, Massachusetts

Institute of Technology

Stephen Sorrell Carpenter, District of
Columbia

Business Administration

B.A. 1965, University of Richmond

Henry Clinton Duquès, Virginia
Accounting

B.B.A. 1965, George Washington

University

Nancy Muller Friedrich, Pennsylvania
Health Care Administration

B.A. 1965, University of Washington

John Francis Goreschak, Jr., Connecticut
International Business

B.S. in B.A. 1967, University of

Bridgeport

Joel Gerson Greenstein, District of
Columbia

International Business

B.A. 1963, Boston University

Allen McGarity Hudson, Maryland
Business Administration

B.S. 1962, University of Maryland

Robert Gordon Hunt, Jr., California
International Business

B.S. 1949, U.S. Naval Academy

Eleanor Parker Hutchins, Florida
Business Administration

B.A. 1950, Florida State University

Wallace Roy Johnston, Virginia

Business Administration

B.B.A. 1967, George Washington

University

Chang Ho Kay, Virginia

Accounting

B.A. 1964, Yonsei University, Korea

William Patrick Kehoe, Maryland

Business Administration

B.B.A. 1963, St. John's University

N.Y.

Stanley Walter Kennedy, Virginia

Business Administration

B.S. 1958, University of Scranton

William John Maddocks, Virginia

Business Administration

B.S. 1941, U.S. Naval Academy

M.S. 1948, Purdue University

Legesse Mammo, Ethiopia

International Business

B.S. 1966, Miami University

Richard Harry Martin, Pennsylvania

Business Administration

B.S. in B.A. 1959, Gannon College

Henry Clarence McDonald, Virginia

Business Administration

B.S. 1961, University of Virginia

Harold Miller, Maryland

Business Administration

B.S. 1949, Temple University

Louis Patrick Neeb, Virginia
Business Administration
B.B.A. 1961, University of Notre Dame
George William Nelson, Jr., Tennessee
Business Administration
B.S. in Journ. 1960, University of Tennessee
David Martin Nitschke, Tennessee
Health Care Administration
B.S. 1963, East Tennessee State University
Michael Francis Palguta, Virginia
Business Administration
B.S. 1965, St. Francis College, Pa.
Jonathan Hayes Parker, Maryland
International Business
B.A. 1967, Tufts University
Frank Michael Patete, Colorado
Business Administration
Met.Engr. 1961, Colorado School of Mines

J. W. Patty III, Virginia
Business Administration
B.S. 1959, Jacksonville State University
William Harold Perrin, Washington
Business Administration
B.A. 1961, University of Washington
Hampton Clark Rabon, Maryland
Business Administration
B.S. 1964, American University
David George Swanz, Maryland
Business Administration
B.S. 1960, University of Detroit
Lyn Floyd Wheeler, New York
International Business
B.A. 1967, St. Lawrence University
Edward Michael Wildes, Maryland
Health Care Administration
B.S. 1950, University of Scranton
James Robert Yeagley, Florida
Health Care Administration
B.A. 1964, Michigan State University

MASTER OF SCIENCE IN ADMINISTRATION

Merle Arthur Coe, Virginia
Management Engineering
B.A. 1964, Oregon State University
Fred Leon Coward III, Virginia
Management Engineering
B.A. 1960, Wake Forest University
J. Scott Kirkwood, Virginia
Governmental Administration
B.B.A. 1947, Tulane University of Louisiana
LL.B. 1965, New York University
Joseph Wayne Koletar, Pennsylvania
Industrial Personnel Management
B.A. 1966, Pennsylvania State University

Lawrence Phillip Larson, Virginia
Management Engineering
B.S. 1958, U.S. Naval Academy
James Patrick Long, Virginia
Automatic Data Processing
B.S. 1961, U.S. Naval Academy
Aristides Melissaratos, Maryland
Management Engineering
B.E.S. 1966, Johns Hopkins University
William Richard Nelson, Virginia
Management Engineering
B.S. 1949, Indiana University
Edward Woodrow Wild, Connecticut
Industrial Personnel Management
B.Gen.Std. 1967, Municipal University of Omaha

MASTER OF SCIENCE IN BUSINESS ADMINISTRATION

Dennis Francis Begley, Virginia
B.E.E. 1964, Rensselaer Polytechnic Institute
Richard Edward Cohen, Virginia
B.A. in Govt. 1958, George Washington University
John Frederick Daye, Jr., Maryland
B.S. 1943, U.S. Military Academy

Paul Kenneth DeGonia, Maryland
B.S. in E.E. 1963, Missouri School of Mines and Metallurgy
Fred Theodore Dick, District of Columbia
B.S. 1949, Seton Hall University
Robert Sidney Douthitt, Virginia
B.S. 1946, U.S. Military Academy

Bill Dwight Ericson, Kansas
B.S. in Agri. 1956, Kansas State
University of Agriculture and Applied
Science
David Louis Gundling, Florida
B.S. in Ch.E. 1942, West Virginia
University
Gleason Hugh Guyette, Jr., Maryland
B.S. in C.E. 1960, University of
Vermont
Lester William Hochheimer, Virginia
B.A. 1948, University of Southern
California
Charles Nelson Hoy, Virginia
B.S. 1965, State University of New
York, College of Forestry at Syracuse
University
Joseph Donald Hynes, Virginia
B.S. 1949, New Mexico State
University
Daya Prakash Jain, Maryland
B. of Textile Tech. 1960, University of
Delhi, India
M.S. 1965, Lowell Technological
Institute

Bernard Edwin Johnsrud, Minnesota
B.S. 1945, U.S. Military Academy
M.S. 1956, Georgia Institute of
Technology
James Donald Kidder, Georgia
B.S. 1943, U.S. Military Academy
George Rae Monthan, Virginia
B.S. 1945, U.S. Naval Academy
James Frederic Reeves, Jr., California
B.S. 1959, Cornell University
John Melborne Schwalje, Virginia
B.A. 1966, University of Maryland
Andrew Serrell, Virginia
B.S. 1966, University of Maryland
Marvin Gilford Smith, Jr., Virginia
B.S. 1962, U.S. Naval Postgraduate
School
John Strohlein, Virginia
B.A. 1949, Yankton College

MASTER OF SCIENCE IN FINANCIAL MANAGEMENT

Thomas Gabriszeski, Maryland
B.S. 1966, Johns Hopkins University
Peter Burton Kenyon, Virginia
B.S. 1955, University of Vermont
Earle Dudley Litzenger, Virginia
B.A. 1953, University of North
Carolina at Chapel Hill
Jack Arian Nelson, Pennsylvania
B.A. 1964, George Washington
University
Robert Calmer Newland, Maryland
B.B.A. 1955, Gonzaga University
James Gerald Owen, Kentucky
B.S. 1948, Western Kentucky State
College

William Ronald Prince, Maryland
B.E.E. 1961, Georgia Institute of
Technology
Ward Robert Reiss, Virginia
B.A. 1950, Wittenberg University
Robert John Ryan, Jr., Virginia
B.S. 1955, St. Joseph's College, Pa.
George Dowell Schwartz, Jr., Maryland
B.Engr.Sc. 1958, B.S. in Engr. 1964,
Johns Hopkins University
Wendell Wood Vance, Virginia
B.A. 1963, University of Maryland

MASTER OF SCIENCE IN GOVERNMENTAL ADMINISTRATION

Francis Xavier Coyle, Maryland
B.S. 1958, U.S. Naval Academy
Richard Peter Dettmar, Virginia
B.B.A. 1955, Pace College
William Albert Forbes, Virginia
B.S. in Mil.Std. 1964, University of
Maryland
Richard Frederick Free, Maryland
LL.B. 1958, University of Maryland

Rhoda Marilyn Greenberg, Maryland
B.A. 1963, Barnard College
Eugene Thomas Lyons, Virginia
B.S. in I.E. 1954, Johns Hopkins
University
Russell Salvatore Maranto, Maryland
LL.B. 1950, University of Baltimore

Myron Christopher Nagurney, Virginia
B.S. 1951, University of Scranton
John Frank Russell, Maryland
LL.B. 1959, B.S. 1964, University of
Maryland
Raymond Lewis Sanders, Jr., New Jersey
B.S. 1961, U.S. Naval Academy

Wanda Smith Thompson, Virginia
B.A. in Ed. 1938, University of South-
western Louisiana
Everett Edward Vetter, Virginia
B.A. 1964, University of Maryland
Robert Leonard Walsh, Maryland
B.S. 1964, Villanova University

MASTER OF SCIENCE IN PERSONNEL ADMINISTRATION

Curtis Harry Alloway, Virginia
B.S. 1942, University of Kansas
John Henry Apici, Rhode Island
B.A. 1964, Texas Christian University
Fred Curtis Brand, Texas
B.S. 1958, University of Wisconsin
Gerhard Evans Brown, Virginia
B.S. 1940, U.S. Military Academy
Maurice Eugene Clark, Maryland
B.S. 1959, U.S. Naval Academy
B.S. in Ae.E. 1967, U.S. Naval
Postgraduate School
Howard Gardner Crowell, Jr., Virginia
B.A. 1954, St. Lawrence University
Thomas Francis Degan, Connecticut
B.S. 1958, U.S. Naval Academy
B.S. in M.E. 1964, U.S. Naval
Postgraduate School
James Francis Duffy, Illinois
B.S. 1960, U.S. Naval Academy
Bernard Earl Eberlein, Maryland
B.S. 1960, U.S. Naval Academy
Bruce Emerson, Virginia
B.A. 1963, University of Maryland
Michael John Joseph Fleming, Virginia
B.A. 1945, Tulane University of
Louisiana
Gilbert Thatcher George, Virginia
B.S. 1964, U.S. Coast Guard Academy
John Paul Hill, Florida
B.S. 1958, University of Maryland
Ronald Elmore Hunter, Virginia
B.A. in Ed. 1951, Central Washington
State College
Gary Lynne Jackson, District of Columbia
B.S. 1962, B.A., B.S. in Comm. 1965,
University of Alabama
John Patrick Kelly, Maryland
B.S. 1962, U.S. Naval Academy
Alan Wadleigh Langworthy, Virginia
B.A. 1966, George Washington
University
Booker Thomas Lewis, Virginia
B.A. 1952, City College, New York
Robert Joseph Lomicky, Maryland
B.S. in Ch.E. 1964, Bucknell
University

Albert Philpott Lovelady, Ohio
B.A. 1966, University of Maryland
Gerald Charles Macks, Maryland
B.E.S. 1964, Johns Hopkins University
Paul Bernard Malone III, Virginia
B.S. 1952, U.S. Military Academy
Richard Stephen Miller, Maryland
B.A. 1961, Ohio Wesleyan University
William Edward Murphy III, Virginia
B.S. 1957, U.S. Military Academy
Douglas Cleland Naismith, Maryland
B.A. 1962, Colgate University
Robert Joseph Parr, Virginia
B.S. 1945, U.S. Military Academy
Robert Edward Parrott, New York
B.S. 1946, College of the Holy Cross
Francis Everett Pearson III, Maine
B.S. 1945, U.S. Naval Academy
William Robert Perry, Alabama
B.S. 1965, University of Maryland
Melvin Merl Prichard, Virginia
B.A. 1965, University of Maryland
Ralph Puckett, Jr., Georgia
B.S. 1949, U.S. Military Academy
Marland Seale Ribble, Virginia
B.B.A. 1954, Texas Technological
College
David Wolfe Riddle, Maryland
B.S. in B.A. 1964, West Virginia
University
Robert Scott Satre, Texas
B.S. 1950, U.S. Naval Academy
B.S. in Ae.E. 1958, U.S. Naval
Postgraduate School
Ae.E. 1959, California Institute of
Technology
Richard Paul Schneider, Maryland
B.S. 1962, University of Baltimore
George Leonard Schulstad, Virginia
B.A. 1966, Park College
Robert William Shaw, Massachusetts
B.A. 1957, Tufts University
Donald Kent Shockey, Jr., Virginia
B.S. in Ind.Mgt. 1962, University of
Arkansas

Oliver Day Street III, New York
 B.S. 1946, U.S. Military Academy
 Frederick Joseph Wargo, Maryland
 B.A. 1962, Rider College
 David Lester Whalen, Maryland
 B.S. 1958, U.S. Merchant Marine
 Academy

Peter Yadlowsky, New Jersey
 B.S. 1954, U.S. Naval Academy
 Ryan Scott Yuille, Virginia
 B.S. in Bus. 1952, Hampton Institute

MASTER OF SCIENCE IN PUBLIC ADMINISTRATION

John Scott Hardy, Virginia
 B.S. 1955, U.S. Military Academy

DOCTOR OF BUSINESS ADMINISTRATION

- Collin Bushway, Virginia
 Business Administration
 Dissertation: *A Comparative Analysis of United States and Foreign Participation in a Common Course of Management Instruction*
 M.B.A. 1958, University of Chicago
- Charles Mauzy DeHority, Virginia
 Business Administration
 Dissertation: *The Applicability of Herzberg's Motivation-maintenance Factors to Employees of ADP Installations*
 B.S. 1938, U.S. Naval Academy
 M.B.A. 1961, George Washington University
- John Neil Ellison, Virginia
 Business Administration
 Dissertation: *The Impact of Tax Exemption and Minimum Wage Policy on Industry Structure in an Interregional Setting: The Case of Puerto Rico and the U.S. Mainland*
 B.S. 1953, M.S. 1960, Virginia Polytechnic Institute
- Harold Edwin Green, Virginia
 Business Administration
 Dissertation: *A Quantitative Analysis Comparing Selected Characteristics of Long-term Care Institutions within Their Various Ownership and Control Classifications*
 B.A. 1954, Andrews University
 M.B.A. 1962, University of Southern California
- Frank Llewellyn Kaufman, New York
 Business Administration
 Dissertation: *United States Developmental Foreign Aid: An Examination of the Needs of Underdeveloped Nations as Represented in the Statements of the Policy-makers*
 B.S. 1949, University of Maryland
 M.B.A. 1956, Temple University
- Benjamin Joseph Loret, Maryland
 Business Administration
 Dissertation: *The Motivation of Air Force Systems Command Officers to Retire Early: A Test of Vroom's Multiplicative Model of Work and Motivation Theory*
 B.S. 1948, U.S. Military Academy
 M.B.A. 1959, New York University
 M.S. in Astronautics 1961, Air Force Institute of Technology

Jerome Ralph Poschel, Missouri

Business Administration

Dissertation: *A Comparative Study of Internal Techniques Used by Federal Agencies for Financing Administrative and Other Common Supporting Services*

B.A. 1958, Drury College

M.B.A. 1960, University of Arkansas

Kendall Washburn Simmons, District of Columbia

Business Administration

Dissertation: *Management in the Nonprofit Advisory Corporation*

B.S. 1941, U.S. Naval Academy

M.A. 1948, University of California, Los Angeles

M.B.A. 1963, George Washington University

Thomas Leo Wheelen, Massachusetts

Business Administration

Dissertation: *An Appraisal of Graduate Business Education by Senior Personnel Management Executives in Industry*

B.S. in B.A. 1957, Boston College

M.B.A. 1961, Babson Institute of Business Administration

SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

Student Marshal: Jeffrey Martin Brookstone

BACHELOR OF ARTS

Jeffrey Martin Brookstone, Florida
International Affairs

James Chromiak, Pennsylvania
International Affairs

Josephine Ellen Crowley, Vermont
International Affairs

Phillip Neff Edmondson, Maryland
International Affairs

Norma Louise Gerstenfeld, District of Columbia
International Affairs

Loretta Mae Sanchez Jonkers, Virginia
International Affairs

William Joseph Meyers, Maryland
International Affairs

Robert Macaulay Ryder, Virginia
International Affairs

John Stanley Sipper, Pennsylvania
International Affairs

MASTER OF ARTS

Merike Aro, New Jersey
International Affairs

James Louis Calio, Delaware
Public Affairs

James Oakley Carson, California
International Affairs

Judith Ellen Corson, Maryland
International Affairs

Thomas Black Coughlin, Georgia
Public Affairs

Thomas Black Coughlin, Georgia
Public Affairs

Jean Marcel Dell'Amore, District of Columbia
International Affairs

William Bartram Folsom, Connecticut
International Affairs

Denis David Gray, Connecticut
International Affairs

B.A. 1966, Yale University

Richard Charles Holmquist, Jr., Texas
International Affairs
B.A. 1967, College of William and Mary
Iradj Izadi, Maryland
International Affairs
B.A. in Govt. 1966, George Washington University
Alison Leighton Kern, New Jersey
International Affairs
B.A. 1964, Wellesley College

Leonard Lamarr Lewane, New Jersey
International Affairs
B.S. 1950, Virginia Military Institute
Earl Clifton Noelte, Jr., New Hampshire
International Affairs
B.A. 1965, Pennsylvania State University
John Park Renninger, Ohio
International Affairs
B.A. 1967, Northwestern University

MASTER OF SCIENCE IN INTERNATIONAL AFFAIRS

Henry Osgood Anson, Florida
B.S. 1944, U.S. Naval Academy
Raymond Earle Buckwalter, Florida
B.S. in Ed. 1940, Pennsylvania State College, Millersville
Barry Wingo Coats, Virginia
B.I.E. 1957, Georgia Institute of Technology
Ralph Collins Elder, New Jersey
B.S. 1954, U.S. Naval Academy
James Oliver Frankosky, Washington
B.S. 1943, U.S. Military Academy
Herbert James Gavin, California
B.S. 1964, University of Maryland
William Henry Greenhalgh, Jr. Alabama
B.S. 1962, University of Maryland
Lloyd Graham Hanley, California
B.A. 1935, University of Missouri
J.D. 1939, George Washington University
Gilbert Richardson Hershey, Rhode Island
B.S. 1956, University of Maryland
John Allen Hoskins, Virginia
B.A. 1951, Dartmouth College
J.D. 1957, Ohio State University

Garold Ashel Hyde, Alabama
B.S. in Agri. 1951, University of Nevada
Erwin Shaw Jackson, Tennessee
B.S. 1942, U.S. Naval Academy
Raymond Anthony Komorowski, Virginia
B.A. 1964, George Washington University
Charles Vincent Lavin, Rhode Island
B.S. 1952, U.S. Naval Academy
Robert Nicholas Miller, Rhode Island
B.S. in E.E. 1940, U.S. Naval Academy
Raymond Leo O'Neil, New York
B.B.A. 1951, St. Bernardine of Siena College
Gerhart Otto Romstedt, Virginia
B.S. in Mil.Std. 1962, University of Maryland
Myron Alfred Roth, Alabama
B.S. 1939, M.A. 1940, New York University
Charles Pinkney Teash, Virginia
B.S. in Mil.Std. 1967, University of Maryland

Annual Commencement, June 8, 1969

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

Student Marshal: Irene Helen Lawson

ASSOCIATE IN ARTS

Howard Alexander Baldue, Maryland
Lucy Carlisle Crenshaw, Virginia
Fred Edward Foltz, Virginia
Nancy Margaret Galyean, District of Columbia

Constantine Pandelaras, Maryland
(With Distinction)
Helena Victoria Pitsvada, Virginia
James Charles Swartz, Maryland

BACHELOR OF ARTS

- Seth Abrams, New York
Political Science
- Lois Barbara Abramson, New York
Biology
- Phyllis Ackerman, Rhode Island
English Literature
- Linda Suzanne Adams, Virginia
English Literature
- Lester Burton Adler, New York
History
- Paul John Albonetti, New York
Economics
- Louise Kendall Aldrich, Virginia
Latin American Studies
- Joel Elliot Alpert, New York
Anthropology
- Marie Charlotte Anderson, District of
Columbia
Spanish Language and Literature
- Arnold Barry Arluke, New Jersey
Sociology
- Julie Elise Armenaki, Virginia
Dramatic Art
- Donald Normand Armstrong, District of
Columbia
French Language and Literature
- Andrew Pearson Arnold, District of
Columbia
American Thought and Civilization
- Mary Ann Bacon, Massachusetts
Geography
- Vicki Jane Baker, Virginia
History
- Eric David Balber, Florida
Political Science (With Distinction)
- Irene Ruth Baroff, New Jersey
Sociology
- Jerome Ira Baron, Virginia
History
- Albert Joel Barr, Pennsylvania
Journalism
- Timothy Michael Barry, District of
Columbia
Economics
- Bette Jean Bartelmes, Virginia
Latin
- Gail Amalia Barth, Maryland
History (Special Honors,
Departmental Honors)
- Beth Risé Baruch, Maryland
Journalism (With Distinction)
- Bernard Norman Bass, Massachusetts
Zoology
- Harvey Charles Bassoff, Maryland
Political Science
- James Clyde Beadles, Maryland
Political Science
- Robert Bruce Belafsky, New Jersey
Zoology
- Ellen Foster Bell, Maryland
Psychology
- Sally Benbasset, New York
Sociology
- Jason Benderly, District of Columbia
Economics
- Ann Kolb Benfield, Pennsylvania
Religion (With Distinction)
- Martha Lee Bennett, New York
Political Science
- Joan Ellen Benson, New Jersey
Sociology
- Anne Allison Berg, New Jersey
Political Science
- Francine Carole Berger, Maryland
Mathematical Statistics
- George Franklin Berner, Virginia
Social Sciences
- Renée Gilda Bernstein, New Jersey
Psychology
- Michael Philip Berry, Pennsylvania
Psychology
- Alberta Edith Bertuzzi, New Jersey
History
- Estelle Brenda Bezan, Rhode Island
Psychology
- Marti Lee Biles, Maryland
Economics
- Joy Ann Bilharz, Pennsylvania
History
- Angela Joan Anderson Billick, District
of Columbia
History (Special Honors)
- Ronda Lynn Billig, New York
American Thought and Civilization
- Robert Billingsley, Jr., Tennessee
Political Science
- Joel Michael Birken, New York
Economics
- Susan Helen Bissell, Virginia
English Literature
- Jack Morris Bobrow, New York
Psychology
- Elizabeth Jane Boisvert, Maine
Psychology

- Marjorie Zee Bonier, New Jersey
Sociology
- Hazel Susan Borenstine, Missouri
Journalism
- Robert John Borgmeyer, South Dakota
History (Departmental Honors)
- George Burt Borkow, Massachusetts
Sociology
- Stanley Arthur Bornstein, New York
Sociology
- Linda Lee Bower, Texas
Economics
- James Worth Boyd, Virginia
Economics
- Hope Mason Boylston, Florida
Anthropology
- Patricia Anne Bramman, Maryland
American Thought and Civilization
- Elaine Phyllis Brand, New York
Journalism
- Katherine Ann Brant, Virginia
Fine Arts
- Catherine Louise Breder, Massachusetts
Art History and Theory
- Peter Allan Breese, District of Columbia
Political Science
- Mary Jane Brewster, Maryland
English Literature
- Sarah Taliaferro Bridges, New York
Anthropology
- Linda Jane Brissman, Maryland
Speech Pathology and Audiology
- Carol Ann Broda, New Jersey
Spanish Language and Literature
- John Frederick Brougher, Jr.,
Pennsylvania
History
- Andrew Mitchell Brown, Connecticut
Political Science
- Myra Brown, Connecticut
Speech Pathology and Audiology
(Special Honors)
- Barbara Joan Buckler, Virginia
English Literature
- David Charles Bulger, Connecticut
American Thought and Civilization
- Arleen Helen Burke, Virginia
Psychology (With Distinction,
Special Honors)
- John Edward Burke, Virginia
Social Sciences
- Lucy-Ann Burke, Rhode Island
Sociology
- Sara Weller Burke, Connecticut
History
- Edward Ray Burns, Maryland
Sociology
- Michael Jayne Buss, Vermont
French Language and Literature
- Karen Louise Byrne, New York
Art History and Theory
- Brian Foster Cabell, California
Political Science
- Catherine Carol Canil, Connecticut
Sociology
- Carla Josephine Carbaugh, District of
Columbia
History
- Thomas Budd Carlough, New Jersey
Political Science
- Patricia Sue Carney, Virginia
Political Science
- William Michael Carroll, Illinois
Political Science
- Laura Jane Castro, Connecticut
English Literature
- Peter Anthony Cavanaugh, District of
Columbia
History
- Judith Latsch Charno, Virginia
Economics
- Diane Windy Charnovitz, Maryland
Psychology
- Karen Hope Chechych, Maryland
Sociology
- Lois May Cheesman, Connecticut
Religion
- Judith Claire Chirlin, California
Political Science
- Margaret Kapp Clark, Pennsylvania
Religion
- Beaufort James Barron Clarke, Virginia
History
- Marjorie Edith Cliff, New Jersey
Journalism
- Elizabeth Judd Chuff, Hawaii
English Literature
- Edgar Maxwell Cocke, Virginia
Social Sciences
- Esther Sue Cohen, Connecticut
English Literature
- Martha Beyer Cohen, District of
Columbia
Anthropology
- Michael Steven Cohen, New Jersey
English Literature
- Michele Nancy Cohen, New Jersey
Psychology (With Distinction,
Special Honors)

- Susan Campbell Cole, New York
Art History and Theory
- Corinne Patterson Colt, New Hampshire
English Literature
- Jonathan David Conescu, New York
Political Science
- Elizabeth Anne Cooper, California
History
- Peggy Ann Cooper, New Jersey
Anthropology
- James Michael Corbeil, Massachusetts
Political Science
- William Sinclair Cordua, Maryland
Geology
- Michelle Souzanne Cormier, Virginia
Economics
- Judy Anne Coughlin, Virginia
English Literature
(With Distinction, Special Honors)
- Susan Mackenzie Craig, New York
Fine Arts
- Arnold Jackson Croddy, Jr., Maryland
Philosophy
- James Joseph Cummins, Pennsylvania
English Literature
- Carol Felton Currie, District of Columbia
Journalism
- Mark Alan Cymrot, New York
Economics
- Nicholas Daniel Dale, New York
Political Science (With Distinction)
- Steven Ronald Daniels, Rhode Island
Political Science
- Susan Carol Davies, Pennsylvania
Sociology
- Peter Paul DeAnna, Jr., District of
Columbia
English Literature
- Helen Frances deChabert, Virginia
Zoology (With Distinction)
- Melissa Fuentes Del Negro, New York
Anthropology
- Frank Louis DeMarco, Jr., New Jersey
History
- Linda Elyse Demkovich, Michigan
History (Departmental Honors)
- Wallace Eugene Derryberry, Virginia
Social Sciences
- Beth Jane Deutsch, New York
Speech Pathology and Audiology
(Special Honors)
- Wilford Emmitt Devine, California
History
- Antoinette Dibrell, Texas
Fine Arts
- Jeanne Ann DiLeo, New York
Sociology
- Deirdre Linda Dixon, Pennsylvania
Sociology
- Janie Winifred Dixon, District of
Columbia
English Literature
- David William Docherty, District of
Columbia
Geography
- Linda Patrice Dodd, Massachusetts
Sociology
- Randi Deloney Dokken, District of
Columbia
Philosophy
- Stephen Jay Draisin, New Jersey
History
- Lee Siver Dryden, New York
Philosophy (With Distinction)
- Amy Porter DuBois, Virginia
Anthropology
- Marilyn Kay Duncan, New York
American Thought and Civilization
- Susan Hilda Dushman, New York
Fine Arts
- Elizabeth Sutton Duvall, New Jersey
English Literature
- Christine Marie Dwyer, Massachusetts
Psychology
- Jean Claire Edwards, New Jersey
Art History and Theory
- Scott Ian Eflund, New Jersey
Political Science
- Mark Eugene Egber, Maryland
Zoology
- Jane Deborah Ehrlich, New York
Political Science
- Stephen Mark Ehrlich, Maryland
French Language and Literature
- Allan Melvin Eisenbaum, New York
Medicine
- Arthur Louis Eisenman, Maryland
Psychology
- Sonja Glass Elmer, Virginia
History
- Barbara Lee Engelson, Connecticut
Sociology
- Albert William Eoff II, Ohio
Social Sciences
- J. William Erhardt, District of Columbia
Economics
- Colette Margret Evans, Illinois
Art History and Theory
- Jane Ellen Fabrikant, New York
Art History and Theory

- Barbara O'Shea Faigin, Maryland
Economics
- Kathleen Mary Fanelli, Pennsylvania
Psychology
- Jan Walkley Faul, District of Columbia
Fine Arts
- Emily Sue Fein, District of Columbia
Sociology
- Nancy Ellen Feldman, Massachusetts
Sociology
- Bruce Alan Felton, Massachusetts
Sociology
- Pamela Jane Fenhagen, Maryland
Sociology
- James Dennis Fennessey III, District of
Columbia
Psychology
- Margaret Fay Ferguson, District of
Columbia
French Language and Literature
- Elizabeth Ann Ferrari, Virginia
Sociology
- Frederique Yvette Fidaio, Maryland
French Language and Literature
- Anne Hood Fine, Maryland
Medicine (With Distinction)
- David Simon Fishback, Maryland
Political Science (With Distinction)
- Judith Ann Fisher, District of Columbia
Political Science
- Martha McIlwain Fisher, District of
Columbia
History
- Gabriele Sabine Fitting, District of
Columbia
History
- Jane Harriet Fixman, New Jersey
Psychology
- Jeanine Danielle Flaherty, District of
Columbia
Art History and Theory
- Patrick Michael Flanagan, New York
Political Science
- Katherine Louise Foran, Connecticut
Art History and Theory
- Neil Martin Foran, Connecticut
Anthropology (With Distinction)
- Caroline Beth Fox, Maryland
Psychology
- Sheldon Robert Franklin, New Jersey
Political Science
- Virginia Laura Fraser, Delaware
Psychology
- Thomas Ross Frazier, District of
Columbia
History
- Susan Fern Freeman, New York
Art History and Theory
- Beatrice Sterling Frelinghuysen,
New Jersey
Anthropology
- Elizabeth Correll French, Connecticut
Art History and Theory
- Ned Fuller, Virginia
Germanic Languages and Literatures
- Bobbie Elaine Fultz, District of
Columbia
Fine Arts
- Marilla Horton Furcolow, Virginia
Latin American Studies
- Jeri-lin Furlow, Maryland
Fine Arts
- Charles Dale Gagnon, Maryland
Social Sciences
- James Francis Galvin, Maryland
Psychology
- Stephen Gass, Maine
Political Science
- Carlton Fenner Gay, District of
Columbia
Political Science
- Patricia Anne Gearhart, Virginia
Psychology
- Barbara Brown Geffner, Rhode Island
Political Science
- Eric Peter Geller, New York
Political Science (With Distinction)
- Claudia Eve Gellman, Missouri
Anthropology
- Patrice Bronson Gennaria, Delaware
Psychology
- Peter Michael Giftos, Maine
Political Science
- Susan Leah Gilwood, New Jersey
Anthropology
- Linda Margaret Gisriel, Virginia
Economics
- Marjorie Ellen Glickman, New York
Political Science
- Arnold Charles Glicksman, New Jersey
English Literature
(With Distinction)
- Howard Gofreed, Maryland
Economics
- Barbara Rae Goldberg, New Jersey
Political Science
- Juliana Vera Goldberg, Virginia
English Literature
- Anne Herlinda Goldfinch, New York
French Language and Literature

- Dennis Alexander Goldman, District of Columbia
History
- Daniel Rustvold Goldy, District of Columbia
Psychology
- Zaida Iris Gonzalez, District of Columbia
English Literature
- Susan Jean Goode, Virginia
English Literature
- Cheryl Rae Goodman, Maryland
Anthropology
- Alan Franklin Goott, Maryland
Political Science
- Barry D. Gordon, Maryland
Geography
- Henry Allen Gordon, Maryland
Sociology
- Jane Ellen Gordon, New York
Psychology (Special Honors)
- Peter Martin Gorman, California
Sociology
- Gabriella Gouveia, Virginia
Social Sciences
- Stuart Jeremy Graines, Ohio
Political Science
- Nancy Frances Granberry, Virginia
Psychology
- Wiley Cleveland Grant III, Pennsylvania
English Literature
- George Jennings Gray, Jr., Virginia
Zoology
- Mary Deirdre Gray, District of Columbia
Art History and Theory
- John Philip Greene, District of Columbia
Anthropology
- Sheila Ellen Greller, New Jersey
Psychology
- Paula Lea Grobman, Pennsylvania
Sociology
- Sandra Elizabeth Groetzinger, Connecticut
American Thought and Civilization
- Rhoda Sue Gross, District of Columbia
English Literature
- Allida Grossman, Delaware
Fine Arts
- Leslie Ann Grossman, District of Columbia
Psychology
- John Gerald Grosso, Jr., New Jersey
History
- Jeanne Ellen Guerin, District of Columbia
American Thought and Civilization
- James Earl Gulotta, Pennsylvania
Religion (With Distinction)
- Anne Temple Gwathmey, Virginia
Fine Arts
- Mary Ellen Haas, New York
History
- Carolyn Marie Haddad, Illinois
Art History and Theory
- Francis Paul Hagan, Georgia
Journalism
- Diane Lucille Hail, California
History
- Mary June Haley, District of Columbia
French Language and Literature
- Dorothy Elizabeth Halzack, Virginia
French Language and Literature
(With Distinction)
- Cynthia Oakes Hamilton, Virginia
Economics
- Laurie Susan Hamilton, Virginia
Psychology (With Distinction)
- Perry Douglas Hamilton, District of Columbia
Sociology
- Laurie Handlers, New York
Sociology
- Michael Roy Hanneld, Indiana
American Thought and Civilization
- Deborah Hansen, District of Columbia
Philosophy (With Distinction)
- Joan Thelen Hanson, Virginia
American Thought and Civilization
- Lynne Harkrader, New Jersey
Political Science
- Michèle Tremaine Hayghe, Virginia
Fine Arts
- Sue Ann Heimlich, New Jersey
Speech Pathology and Audiology
(With Distinction, Special Honors)
- Mary Margaret Heller, Virginia
History
- Robert Ann Heller, Pennsylvania
Art History and Theory
(With Distinction)
- Kenneth Allen Hellman, New York
Political Science
- Elliott Martin Henson, New Jersey
Zoology
- Jacqueline Henriette Hertz, New York
Sociology
- Robert Blake Hessler, Delaware
Journalism
- Susan Marie Higgins, Illinois
Political Science
- David O'Neil Hightower, Georgia
Philosophy
- Elizabeth Anne Hirsch, District of Columbia
Political Science

- William Nielsen Hobbs, District of
Columbia
Sociology
- Gerald Thomas Holland, District of
Columbia
Economics
- Myra Shari Holtzman, New Jersey
Speech Pathology and Audiology
- Ronald Elliott Holtzman, Maryland
Psychology
- John Homrighausen, New Jersey
English Literature
- Karen Gail Horn, Connecticut
Art History and Theory
- Marilyn June Horowitz, New York
Political Science
- Robert William Horrobin, Maryland
Social Sciences
- Barbara Smith Horwitz, Maryland
History
- William Patrick Hovia, Virginia
Political Science
- Lloyd Gordon Huggins, Texas
Social Sciences
- Justine Mascioli Hughes, District of
Columbia
History
- Mark Valerian Hughes III, District of
Columbia
Physics
- Roger Teigen Hughes, Virginia
Geology
- Peter Howard Hyde, District of Columbia
American Thought and Civilization
- Richard Joel Ikenberry, Virginia
History
- Bruce Douglas Ingraham, Pennsylvania
English Literature
- Donna Gay Israel, New Jersey
Psychology (With Distinction,
Special Honors)
- Diana Jackson, Connecticut
Political Science
- Katherine Ann James, New Jersey
History
- Nelson Botts Janes, District of Columbia
English Literature
- James Anthony Janus, Ohio
Political Science
- Colin Lee Johnson, Virginia
Mathematics
- Jane Susan Johnson, Connecticut
Art History and Theory
- Rachel Louise Johnson, Vermont
Political Science
- Paula Adair Jones, Maryland
Anthropology
- Raymond Veber Jones, Virginia
Political Science
- Pamela Smith Jordan, New York
Art History and Theory
- Vivian Marie Jorysh, New York
Anthropology
- Jeffrey Harold Joseph, Ohio
History
- Marsha Ann Kadesch, Maryland
Anthropology
- Robert Phillip Kagan, Pennsylvania
Economics
- Ronald Martin Kagel, New York
Political Science
- Jody Frances Kahn, New York
Political Science
- Allyson Iris Kalem, New Jersey
Sociology
- John Kane, New York
Zoology
- Susan Calhoun Kane, Virginia
American Thought and Civilization
(With Distinction, Special Honors)
- Barbara Bayer Kaplan, Virginia
Sociology
- Arlene Fran Katz, New Jersey
French Language and Literature
(With Distinction)
- Rosalind Eve Kaufman, Virginia
Speech Pathology and Audiology
- Lawrence Paul Keblusek, Illinois
Economics
- Candace Lenoir Kelton, Colorado
English Literature
(With Distinction)
- Kenneth Richard Kephart, District of
Columbia
Economics
- Michael Henry Keppler, New Jersey
Zoology
- Lucyann Snyder Kerry, Virginia
Geology
- Barbara Lynn Kesselman, New Jersey
French Language and Literature
- Stephen John King, Virginia
Anthropology (With Distinction)
- Rose Marie Kirkpatrick, District of
Columbia
Mathematics
- Alice Judith Klein, New Jersey
Political Science (With Distinction)
- Shirley Helen Kline, New Jersey
Political Science (With Distinction)
- Joan Gale Kloogman, New York
Sociology
- Tina Jane Knie, New Jersey
Sociology

- Michael Robert Koblenz, New Jersey
Political Science
- Robert Henry Koch, Jr., District of
Columbia
Political Science
- Linda Nancy Koplin, Pennsylvania
Psychology
- Marianne Koppelman, New York
Speech Pathology and Audiology
- Elizabeth Cole Koprowski, Virginia
Psychology
- Regina Duchin Kraus, Virginia
Speech Pathology and Audiology
- Patricia Jessann Kravik, Virginia
American Thought and Civilization
- Alan Frank Kreglow, Jr., District of
Columbia
Economics
- Kathleen Jo Kretzmer, California
Psychology
- Michael Jan Kuba, New York
Political Science
- Charlotte Anna Kuenen, District of
Columbia
Philosophy
- Carolyn Edith Kuhn, Virginia
Fine Arts
- Allan Lee Kulikoff, Maryland
American Thought and Civilization
(With Distinction, Special Honors)
- Linda Dee Kulin, Massachusetts
English Literature
- Walter Richard Kusak, Connecticut
Political Science
- Paul Michael Kuzma, Jr., Ohio
Zoology
- Wendy Ann Laderberg, Virginia
Speech Pathology and Audiology
(Special Honors)
- Judith Anne LaHood, New York
English Literature
- Jorge Carlos Lamas, Virginia
Economics
- Tara Maureen Lang, District of
Columbia
Psychology
- Marian Doris Langer, District of
Columbia
History
- Virginia Lee Lanham, Maryland
Anthropology
- Cynthia Brian Laskey, New York
American Thought and Civilization
- Michele Wright Latham, Maryland
Journalism
- Deborah Laurie Laufer, Rhode Island
Anthropology
- Irene Helen Lawson, Kentucky
Economics (With Distinction,
Special Honors)
- Joan Elizabeth Laycock, New York
Art History and Theory
- Dennis Steven Lazar, New York
History
- Cheri Linda Leblang, New York
Art History and Theory
- Marvin Lehman, New Jersey
Economics
- Diane Marholin Lehrer, Connecticut
Anthropology
- Caryl Wolfson Leightman, Maryland
Political Science
- George John Lenches, District of
Columbia
Germanic Languages and Literatures
(With Distinction)
- Marc Alan Lerner, Maryland
Political Science
- Randi Alice Levey, Virginia
Psychology
- Barbara Ann Levi, New York
Art History and Theory
- Toby Cirle Levin, Maryland
Political Science
- Franklin Neil Levinson, New York
Sociology
- Joan Lia Levy, New York
Sociology
- Norbert Steven Linder, Virginia
History
- Terrence Lee Lisbeth, Virginia
English Literature
- Patrick William Lohn, Virginia
History
- Elizabeth St. John Loker, District of
Columbia
Philosophy (With Distinction)
- Monica Paula Lombardo, Italy
English Literature
- Elizabeth Barth Love, Georgia
Political Science
- Susan Barbara Low, New York
Psychology
- Eva Hilda Lowenstein, New York
French Language and Literature
- Stephen Edwin Lowenstein, Virginia
History
- Nancy Diane Loy, Virginia
Sociology (With Distinction)
- Isabel Maria Lucom, District of
Columbia
Art History and Theory
- Katherine Huber Ludlow, Virginia
Psychology

- Steven Warren Luger, District of Columbia
Geology (With Distinction)
- James John Lyons, District of Columbia
American Thought and Civilization
- James Tilio Maccaferri, Massachusetts
History (Departmental Honors)
- Jane Merriman MacKenzie, Connecticut
Fine Arts
- Merry Jo MacKinnon, New Jersey
English Literature
- Katherine Christine Malik, Connecticut
Sociology
- Patricia Ann Mallon, Maryland
English Literature
- David Ira Mandelbaum, New York
Psychology
- John Vincent Maraney, Virginia
Political Science
- Edward David Marion, New York
Medicine
- Kenneth Alan Markison, Maryland
Political Science
- Marcia Dale Markowitz, New Jersey
Sociology
- Joan Carol Marksamer, New York
Sociology
- Marc Marmaro, New York
History (Departmental Honors)
- Jeffrey Joel Maron, New Jersey
Zoology
- Deniza Dean Martin, Maryland
History
- Francis Xavier Martin, Jr., New York
History (Departmental Honors)
- Katalin Ilona Marton, Maryland
French Language and Literature
- Duane Stanley Marusa, Pennsylvania
Anthropology
- Andrew William Mason, Oklahoma
Economics (Special Honors)
- Sharlynn Elaine Matthews, District of Columbia
Sociology
- Maryann Maurer, New Jersey
Anthropology
- Richard Omer Maurice, New Jersey
Psychology
- John Peter McCart, Maryland
Psychology
- Edith Whitehouse McCarthy, Virginia
Social Sciences
- James Allan McCarty, Virginia
Natural Sciences
- Robert Craig McClenon, District of Columbia
Chemistry
(With Distinction, Special Honors)
- Donald McCormick, Maryland
Fine Arts (With Distinction)
- Patricia Carroll McKenney, Jr., Virginia
Art History and Theory
(With Distinction)
- Mary Katherine McKinney, District of Columbia
Sociology
- Thomas Earl McLaughlin, Pennsylvania
Mathematics and Physical Sciences
- Ellen McNaught Measday, Virginia
French Language and Literature
- Pamela Jo Anne Melichar, Illinois
Sociology
- William Stanley Mensh, Maryland
History (With Distinction,
Departmental Honors,
Special Honors)
- Kenneth David Merin, New Jersey
Political Science
- Hope Candida Messing, New York
Fine Arts
- Louise Rowney Michelsen, Maryland
Political Science
- Robert Edward Michelson, Maryland
Political Science
- Lorraine Kathleen Middleton, District of Columbia
English Literature
(With Distinction, Special Honors)
- Diana Lynn Milford, Maryland
Fine Arts
- Sara Ann Millard, Virginia
French Language and Literature
- Barbara Susan Miller, New York
Fine Arts
- Carolyn Ann Miller, Maryland
Economics
- David Carl Miller, New York
History
- Marilyn Sue Miller, New York
Speech Pathology and Audiology
- Richard Steven Miller, New York
Political Science (Special Honors)
- Eric Peter Mink, Missouri
English Literature
- Gloria Jean Mintz, Connecticut
English Literature
- Fernando José Dória Montenegro, Maryland
Economics (With Distinction)

- Francis Adrian Mooney, District of
Columbia
Geography
- Allyson Gardell Moore, Virginia
American Thought and Civilization
- Charles Bachman Moore III, District of
Columbia
Sociology
- Victoria Ann Moore, Maryland
Art History and Theory
- Margaret Morrison, Hawaii
Fine Arts (With Distinction)
- Pamela Gay Morrison, Virginia
Music History and Literature
(With Distinction)
- Susan Mosehauer, Connecticut
Psychology
- Simor Lewin Moskowitz, District of
Columbia
Political Science
- Dennis Patrick Mullin, Connecticut
Journalism
- Rosemary Norris Murphy, District of
Columbia
English Literature
- Judith Mary Murray, New Jersey
Sociology
- Elaine Joyce Narod, Pennsylvania
Political Science (With Distinction)
- Miriam Eileen Nathan, District of
Columbia
Speech Pathology and Audiology
- Isa Natovitz, New Jersey
Speech (With Distinction,
Special Honors)
- Raymond Griffin Neal, Rhode Island
Social Sciences
- Richard William Neitz, Massachusetts
Political Science
- Elizabeth Nelson, Connecticut
Art History and Theory
- Sharon Maxine Niederman, New Jersey
English Literature
- Janet Nimoityn, Pennsylvania
Latin
- Oiva Richard Niska, Virginia
Social Sciences
- Powel Byrd Nixdorff, Maryland
Sociology
- Lynn Elise Nyberg, District of Columbia
Speech
- Barbara Oakley, Connecticut
Art History and Theory
- Peter O'Brien, Virginia
Social Sciences
- Sharon Maureen O'Connell, New Jersey
History
- Roger Olian, Virginia
Psychology
- Jane Corey Oliver, Virginia
Journalism
- Irene Frazier Olson, District of
Columbia
Psychology
- Gary Stewart O'Neal, District of
Columbia
Political Science
- Karen Audrey O'Neill, Illinois
English Literature
- Susan Joyce Orr, New York
Art History and Theory
- John Gregory Oswald, Virginia
History (Special Honors)
- Beverly Cynthia Oxman, Massachusetts
English Literature
- Mary Jane Pagan, District of Columbia
Art History and Theory
- Richard Andrew Pandich, New York
History
- Petro George Papageorge, Virginia
English Literature
- Fereniki Papanicolas, Virginia
English Literature
- David Stanley Parker, Massachusetts
English Literature
- Alfrieta Velois Parks, District of
Columbia
Sociology
- Gail Ann Patelcuis, Massachusetts
Political Science
- John Michael Patton, District of
Columbia
History
- Louanne Peck, California
Political Science
- Jane Dee Perlman, Maryland
Psychology
- Jeffrey Lyn Perlman, Georgia
Political Science
- Philip Nicholas Perrella, New Jersey
Psychology
- Karen Kay Peters, New York
Sociology
- Marlenna Jo Peters, Pennsylvania
Psychology
- Nancy Kaye Peterson, Maryland
English Literature
- Lois Anne Pflugh, New Jersey
Sociology
- Edward Perry Phillips, Jr., Connecticut
Zoology
- Teri Anne Pickett, New York
Art History and Theory

Janice Ashton Pinckney, District of
 Columbia
 Speech Pathology and Audiology
 Stuart Edward Pine, New Jersey
 Religion
 Penelope Anne Pitt, New Jersey
 French Language and Literature
 Gail Stiles Pittenger, Virginia
 Speech Pathology and Audiology
 Ann Claire Planutis, Virginia
 French Language and Literature
 (With Distinction)
 Mark Louis Plotkin, Illinois
 History
 Priscilla Anne Poe, District of Columbia
 Sociology
 Mary Suzanne Polden, California
 English Literature
 Drue Mindel Pollack, Maryland
 History
 Jane Louisa Polsky, Virginia
 English Literature
 Paula Andrea Pontani, New Jersey
 Psychology
 Esther Fletcher Porter, Virginia
 Painting
 Ester Preuss, Argentina
 French Language and Literature
 Paul John Radovic, New Jersey
 Economics
 Susan Iris Rappaport, Pennsylvania
 Anthropology
 Margaret Merry Raskin, Maryland
 Sociology
 Scott Lee Rathbun, District of Columbia
 History
 Catherine Elizabeth Ray, Montana
 Russian Language and Literature
 Muriel Zimm Ray, Tennessee
 Social Sciences
 John Gerald Reeder, District of
 Columbia
 Economics
 Richard Brian Reff, Maryland
 Medicine
 Leslie Roberta Reichertz, Connecticut
 Russian Language and Literature
 (With Distinction)
 Helen Reichmann, Maryland
 Psychology (With Distinction)
 William Richard Reksan, Michigan
 Sociology
 Richard Stanley Relac, District of
 Columbia
 Russian Language and Literature

John MacLaren Richardson, Jr.,
 Virginia
 Social Sciences
 Paula Jean Richardson, Virginia
 Art History and Theory
 Phillip Joel Richmond, Massachusetts
 Political Science
 William Hudson Rickenbacher, Texas
 American Thought and Civilization
 Martina Roudabush Rinehart, Virginia
 Art History and Theory
 Ilia Ivette Rios, Puerto Rico
 French Language and Literature
 Richard Alan Robbins, New Jersey
 Psychology
 Helen Jacqueline Robin, District of
 Columbia
 Political Science
 Eric Gibson Rodriguez, Maryland
 English Literature
 (With Distinction, Special Honors)
 Ruth Adams Rogers, Virginia
 Political Science
 Jonathan Michael Rogoff, New York
 Economics
 Susan Roistacher, District of Columbia
 Zoology
 Andrea Ellen Rose, New York
 Anthropology
 Alan Mark Rosen, Massachusetts
 Psychology
 Nancy Pulver Rosen, Massachusetts
 Anthropology
 Theodore Howard Rosen, Maryland
 Psychology
 Joan Lee Rosenberg, New Jersey
 English Literature
 Margaret Redstone Rosenstock, Virginia
 Speech Pathology and Audiology
 Jesse Samuel Rosenthal, New York
 Zoology
 Nina Gail Rosoff, Pennsylvania
 Russian Language and Literature
 (With Distinction)
 Leonard Nathan Ross, Massachusetts
 History
 Robert Beals Ross, New Hampshire
 English Literature
 Nancy Constance Rossi, New Jersey
 Spanish Language and Literature
 Jane Norris Roxbrough, Virginia
 English Literature
 Linda Rozen, District of Columbia
 Art History and Theory
 Nancie Jill Rubin, New York
 Art History and Theory

- Judith Ann Rubinow, Massachusetts
Psychology
- Christine Bueter Rudy, Virginia
Psychology
- Sharon Aviva Rutzick, District of
Columbia
Sociology
- Patricia Anne Ryan, Massachusetts
English Literature
- Julie Margaret Sancier, New York
Anthropology
- John Alan Sanet, New York
History
- James Kershaw Sapienza, District of
Columbia
History
- Sandra Sue Saska, Maryland
Journalism
- Joseph Andrew Scallan, Ohio
History
- Stelianos George Scarlis, District of
Columbia
History
- Lawrence David Schaffer, Virginia
Psychology
- George Martin Scheets, Illinois
Social Sciences
- David Joel Schlachter, Iowa
Political Science
- Ronald Charles Schlifftman, New York
Psychology
- John Alvin Schlosser, Pennsylvania
Political Science
- Deborah Marian Schure, New York
Art History and Theory
- Jonathan Marc Schwartz, New York
Speech
- Michael Carl Schweitz, Maryland
Medicine
- Stephanie Laura Scott, Pennsylvania
History
- Daniel James Sculerati, District of
Columbia
History
- Marcie Joyce Seigel, Connecticut
Art History and Theory
(With Distinction)
- Robert Carl Seligman, California
Psychology
- Lawrence Jay Seltzer, New York
Psychology
- Steven Michael Selzer, New Jersey
Sociology
- James Russell Seymour, Connecticut
History
- Carol Shapiro, District of Columbia
Anthropology
- Lauren Phyllis Shaw, District of
Columbia
Art History and Theory
- Mary Elizabeth Shilling, Maryland
English Literature
- Betty Joy Shulman, New Jersey
Art History and Theory
- Jacqueline Paula Shulman, District of
Columbia
Speech Pathology and Audiology
- Cheryl Jean Sickles, New York
Sociology
- Renée Siegel, Virginia
Political Science
- Phyllis Arlene Silver, New Jersey
Speech Pathology and Audiology
- Steven Alan Silver, New York
Psychology
- Kenneth Jerome Silverstone, District of
Columbia
Journalism
- Rona Susan Silverton, Massachusetts
Psychology (With Distinction,
Special Honors)
- Karen Nordstrom Sinderson, Maryland
History
- Stuart Arnold Sirkin, New Jersey
Economics
- Myra Lynn Skipper, Maryland
Psychology
- Paul David Slattery, District of Columbia
Russian Language and Literature
- Harrison Terry Slaughter, District of
Columbia
Anthropology
- Mary Josephine Slavsky, Michigan
Sociology
- Susan Duerr Sloan, Virginia
American Thought and Civilization
- Paul McNeil Smith, New York
Psychology
- Susan Leigh Smith, Virginia
English Literature
- Thomas Cy Smith, Florida
Economics
- Rose Soghomonian, District of Columbia
Spanish Language and Literature
- Howard Soltz, Virginia
Sociology
- Patricia Lynn Sondheimer, Maryland
Political Science
- Barbara Sonnenschein, New York
Psychology
- Jack Dorian Sonnenschein, Maryland
Political Science

- Sue Sosler, New York
Sociology
- Frances Diane South, Maryland
History
- Donna Louise Southwell, Maryland
Mathematics
- Ellen Gage Southworth, Maryland
Political Science
- Joseph Frederick Sower, Virginia
Social Sciences
- Marjorie Huston Spackman,
Pennsylvania
Sociology
- Suzanne Kratzok Speck, District of
Columbia
Sociology
- Eugenia Brook Speidel, District of
Columbia
Anthropology
- Steven Mark Sperling, New Jersey
Economics
- Susan Roberta Spivak, Pennsylvania
Anthropology
- William Allen Srole, Maryland
History
- Robert Laurin Standerwick, Kansas
Social Sciences
- Paula Elizabeth Stark, New Jersey
Sociology
- Linda Rose Steele, New Jersey
Psychology
- Joseph Vincent Stewart, New Jersey
Political Science
- Ronald Neil Stewart, Maryland
Political Science
- Ellen Stockdale, Virginia
Anthropology
- Craig Storti, Vermont
English Literature
(With Distinction, Special Honors)
- Marilyn Joan Strauss, New Jersey
Political Science
- Mary Margaret Strasser, Virginia
American Thought and Civilization
- Nancy Heath Suda, Virginia
English Literature
- Robert Alan Sugarman, Florida
Economics
- Claire Elizabeth Sugden, Connecticut
English Literature
- Elizabeth Margo Susser, New Jersey
Dramatic Art
- Michael Stuart Sussman, New York
Political Science
- Paula Renée Swartz, Massachusetts
Speech Pathology and Audiology
- Allan Paul Swerdloff, District of
Columbia
History
- Jane Ellen Tannenbaum, New Jersey
Art History and Theory
- David Roger Taxin, New York
Political Science
- Rita Tesoriero, New York
Anthropology
- Elise Marie Thorn, Virginia
Fine Arts
- Alice France Titus, Virginia
Fine Arts
- Luis Guillermo Torres, Colombia
Economics
- Robert Gustave Trache, New York
History
- Dinah Ellen Trachtman, New Jersey
Anthropology
- Lynda Lee Treadway, Nebraska
History
- Richard James Trent, Virginia
Anthropology
- Dana Elisabeth Trice, Pennsylvania
Art History and Theory
- Susan Mary Troccoli, Connecticut
Art History and Theory
- Joel Stephen Turett, District of Columbia
Political Science (With Distinction,
Special Honors)
- Cheryl Jane Turner, Illinois
French Language and Literature
- David Bruce Unger, District of Columbia
Sociology
- Robert Frederick VanVoorhees,
Pennsylvania
Political Science
- Eugene George Vincent, New Jersey
Political Science
- Andrew Alfred Vogt, New Jersey
Political Science
- Paul Spencer Wachtel, New Jersey
Psychology
- Cathy Rose Walters, New Jersey
Psychology
- Richard Ti-Kai Wan, District of
Columbia
Political Science
- William Henry Wanlund, District of
Columbia
Journalism
- Ilene Yvonne Warren, New Jersey
Psychology (Special Honors)
- Barbara Gayl Weil, New York
Sociology

Elisabeth Endicott Weil, District of
Columbia
Economics
Elliott Lloyd Wein, New York
Sociology
Barbara Zella Weiner, Maryland
Psychology (With Distinction,
Special Honors)
Charles Allen Weinstein, Rhode Island
French Language and Literature
Ellen Weiss, New York
Sociology
Howard Marc Weiss, New York
Psychology
Patricia Rhea Weiss, New Jersey
History
Rosemary Virginia Welden, New Jersey
English Literature
Joyce Crocker Welsh, District of
Columbia
Art History and Theory
Pierre Jacques Wessel, Pennsylvania
History
Jeffrey Stuart Whinston, Connecticut
Psychology (With Distinction,
Special Honors)
Helen Marie Whitebread, Maryland
Art History and Theory
James Robert Wilde, Jr., District of
Columbia
Political Science

Sarah Whitney Wilkerson, Connecticut
Fine Arts
Lawrence John Wilner, District of
Columbia
Anthropology
Ernest Dieter Wolf, Virginia
Philosophy
Richard Arnold Wolfsie, New York
American Thought and Civilization
Mary Elaine McHugh Woodhead,
Maryland
Fine Arts
Wendy Woodson, Virginia
History
April Jeanette Works, Massachusetts
Art History and Theory
Felix Michael Wysocki, Delaware
Political Science (With Distinction)
Ronald Mashaharu Yonemoto, Hawaii
Psychology
Elmer Milton Young, Virginia
Art History and Theory
Alice Youngerman, Arizona
English Literature
Bruce Zagaris, California
History
Clay Harrison Zahn, New York
History
Judith Katy Zilczer, Virginia
Art History and Theory (With
Distinction)

BACHELOR OF SCIENCE

Shelea Lavonne Allison, District of
Columbia
Chemistry
Eva Helen Barberich, Maryland
Zoology
Linda Biser Behrens, District of
Columbia
Biology
B.A. 1962, University of North
Carolina at Chapel Hill
Norman Roger Bishop, Maryland
Biology
Bruce Charles Bollinger, Colorado
Zoology
Ann Shay Carroll, Pennsylvania
Zoology
James Walter Carter III, District of
Columbia
Chemistry
Myra Lee Chaplin, New Jersey
Zoology

Clare Crandall, District of Columbia
Biology (With Distinction)
Edythe Sue Danick, Maryland
Zoology
Cathryn Suzette Dippo, New York
Mathematical Statistics (Special
Honors)
Candace Jean Erickson, Maryland
Chemistry
Robert Howe Foote, Pennsylvania
Geology
Jane Franklin Goldthorn, Maryland
Chemistry
David Richard Greenberg, New York
Biology
Shereen Lea Greenberg, Massachusetts
Zoology
Robert Chung-Hwei Hsieh, District of
Columbia
Zoology

Morrie Abraham Kaplan, Connecticut
Zoology
Sara Jane Kelly, Maryland
Biology
Hortensia Maria Klos, Austria
Biology
John Willson Laskey, Maryland
Zoology
Phillip Charles Liverman, Virginia
Chemistry
Iris Lee Long, District of Columbia
Mathematical Statistics
Martin Robert Luloff, New York
Zoology
Robert Stephen McCormick, Maryland
Biology (With Distinction)
John Wesley Melone, District of
Columbia
Physics (With Distinction)
Kathleen Hynes Melone, District of
Columbia
Zoology
Leslie Ann Miller, Virginia
Zoology
Harvileen Mary Moebs, Virginia
Chemistry
Dianne Cecelia Parrish, District of
Columbia
Mathematical Statistics

Edward Lee Perl, Maryland
Zoology
William James Redwine, Virginia
Zoology
Aleda Hays Rickelton, Virginia
Chemistry
Roland Louis Romain, Maryland
Mathematics
Arnold Jay Rosenblatt, Maryland
Chemistry
Thomas Walter Scott, Virginia
Zoology
Rabab Bitar Shanqitie, Virginia
Mathematics
Roger Michael Strong, Michigan
Zoology
Harry Christian Strunz, Virginia
Physics
Peter George Tarasoff, Virginia
Chemistry (With Distinction)
Donald Theron Van de Water, Florida
Zoology
Lennon Douglas Wyche, Jr., District
of Columbia
Zoology

BACHELOR OF SCIENCE IN GENERAL STUDIES

Margaret Elizabeth Dougherty, Virginia
History
Harlan Ralph Purdy, New York
Political Science
Jerome Raymond Strayve, Illinois
Political Science
Charles Roland Upshaw, California
History

BACHELOR OF SCIENCE IN GEODETIC AND CARTOGRAPHIC SCIENCE

Charles Harold Davies, Maryland
Cartography
Michael Clifton Rose, Maryland
Geodesy

BACHELOR OF SCIENCE IN OCEANOGRAPHY

Cyrus George Rhode, Jr., Virginia

GRADUATE SCHOOL OF ARTS AND SCIENCES

MASTER OF ARTS

- Carolyn Rice Barnes, Maryland
Psychology
B.A. 1956, Vassar College
- Paul Cole Beach, Jr., Maryland
Political Science
B.A. in Govt. 1965, George Washington University
- Robert George Beauchamp, Maryland
Geology
B.A. 1966, George Washington University
- Melville Edgar Blake, Jr., District of Columbia
Economics
B.S. in F.S. 1949, Georgetown University
- Nancy Bennett Bourne, New York
American Literary and Cultural History
B.A. 1961, Duke University
- Cecilia Esmond Mansfield Bullard, Virginia
American Literary and Cultural History
B.A. 1968, George Washington University
- Frances Ryan Burdette, Michigan
English Literature
B.A. 1963, George Washington University
- Nathaniel Blancaflor Cabanilla, District of Columbia
Economics
B.A. 1963, University of the Philippines
- Elizabeth Ann Dagenhardt, District of Columbia
Art History and Criticism
B.A. 1967, George Washington University
- Jon Evan Del Russo, New Jersey
Psychology
B.A. 1967, East Carolina University
- Sergio Duarte, District of Columbia
Spanish Language and Literature
B.A. 1967, George Washington University
- Lucia Annamaria Finocchiaro, District of Columbia
French Language and Literature
B.A. 1967, St. Joseph College, Conn.
- George Leopold Frenkel, Maryland
Germanic Languages and Literatures
B.A. 1960, Kansas State University
- Elayne Sheila Gardstein, Virginia
Art History and Criticism
B.A. 1967, Connecticut College
- Anne Elise Grimmer, District of Columbia
Art History and Criticism
B.A. 1967, Wheaton College
- Norman Frederick Hammer, Jr., Virginia
Urban and Regional Development
B.A. 1962, Ohio Wesleyan University
LL.B. 1965, George Washington University
- Henry Ford Hildebrandt, District of Columbia
History
B.A. 1967, Grove City College
- Mary Byrne Hollingshead, Virginia
English and American Literature
B.A. 1956, Smith College
- William Lee Hovey, District of Columbia
Spanish Language and Literature
B.A. 1967, George Washington University
- Frederick Burdette Hull, Jr., District of Columbia
History
B.S. 1954, Ohio State University
- Susan Fellows Hyde, Virginia
Religion
B.A. 1964, Wheaton College
- Charles Keizo Kanno, District of Columbia
Psychology
B.S. in Ed., B.A. 1957, North Texas State University
- Joan Warenbud Koff, New York
Psychology
B.A. 1966, City College, New York
- Wilma Louise Kraus, South Carolina
Psychology
B.A. 1961, Bucknell University
- Ercis Kurtulus, District of Columbia
Economics
B.A. 1960, Ankara University, Turkey

- Philip Daniel Landsberger, District of Columbia
Economics
B.A. 1949, Brown University
- Wilbert John Layng, Virginia
Economics
B.A. 1961, Dickinson College
- Barbara Vernon Lynch, Arizona
English and American Literature
B.A. 1967, University of Arizona
- Clayton Caywood McCuiston, Maryland
Economics
B.B.A. 1965, George Washington University
- Harold Lyman Miller, District of Columbia
History
B.A. 1966, Princeton University
- Joan Woodworth Mullan, District of Columbia
American Literary and Cultural History
B.A. 1949, Trinity College, D.C.
- Winnie Pringle Pannell, North Carolina
History
B.A. 1963, University of Colorado
- Barbara Ann Presnall, Texas
Political Science
B.A. 1965, George Washington University
- John Donald Schmidt, Canada
Geography
B.A. 1963, University of Toronto, Canada
- Marcia Ray Scott, Virginia
Political Science
B.A. 1967, George Washington University
- Susan Louise Burgess Shenstone, Canada
English and American Literature
B.A. 1949, University of Toronto, Canada
- Joan Massel Silard, District of Columbia
Spanish American Literature
B.A. 1966, American University
- Nancy Joan Skon, Virginia
History
B.A. 1967, George Washington University
- Esther Barbara Sovde, Massachusetts
Psychology
B.A. 1964, Bethany College, W. Va.
- Norma Susan Stern, District of Columbia
History
B.A. 1963, Pennsylvania State University
- Rosalind De Saussure Todd, South Carolina
Political Science
B.A. 1967, Agnes Scott College
- Richard Meaker Trask, District of Columbia
English
B.A. 1964, George Washington University
- St. Clair Joseph Tweedie, Virginia
Economics
B.A. 1964, Old Dominion College
- Katherine Meekins Vale, District of Columbia
French Language and Literature
B.A. 1964, George Washington University
- Ellen Hegman Wall, District of Columbia
American Literary and Cultural History
B.A. 1962, Texas Christian University
- Richard David Wert, Virginia
Geography
B.S. 1963, Pennsylvania State University
- Mary Margaret Whipple, England
American Literary and Cultural History
B.A. 1962, American University
- Helene Novick Wolff, District of Columbia
French Language and Literature
B.A. 1963, George Washington University
- Ralph Rowland Young, Virginia
Economics
B.A. 1965, University of New Hampshire
- Valentine Zabijaka, Maryland
Economics
B.A. in Govt. 1960, George Washington University

MASTER OF FINE ARTS

- Carol Gulino Duffy, District of Columbia
Graphics
B.A. 1961, University of Connecticut
- Margaret Louise Herscher, Michigan
Sculpture
B.A. 1967, Brown University

Eleanor Anne Johnson, District of
Columbia
Sculpture
B.A. 1961, Cornell University
M.A. 1963, Case Western Reserve
University

Elizabeth Rhoades Littlepage, District
of Columbia
Painting
B.A. 1967, George Washington
University
Susan Jane Middleman, Maryland
Painting
B.F.A. 1965, Carnegie-Mellon
University

MASTER OF PHILOSOPHY

Hildegard Zucker Barglow, Illinois
Germanic Languages and Literatures
B.A. 1962, University of Denver
M.A. 1963, University of Colorado
Joshi Bhagvatishanker, District of
Columbia
Political Science
B.A. 1954, M.A. 1957, Gujarat
University, India
Julio Castro, Maryland
Economics
B.S. 1959, M.A. 1961, Columbia
University
Craig Morrison Cleaves, Virginia
Psychology
B.A. 1962, Bowdoin College
M.A. 1965, George Washington
University
Max Harry Cohen, Maryland
Microbiology
B.A. 1961, Columbia University
M.D. 1965, Harvard University
John Calhoun Cooper III, District of
Columbia
Chemistry
B.A. 1964, Duke University
Donald Henry Craver, Maryland
American Literature
B.S. 1956, Wake Forest University
M.A. 1959, Duke University
Grant Campbell Edwards, Maryland
Chemistry
B.S. 1958, George Washington
University
Mary Wilkinson Fox, Virginia
Mathematical Statistics
B.A. 1954, George Washington
University
Ruth Iris Geran, Virginia
Biology
B.A. 1944, American University
M.S. 1954, George Washington
University
Robert Roy Herr, Virginia
Botany
B.S. in Ed. 1951, Kent State University

Robert Indelman, New York
History
B.A. 1964, George Washington
University
M.A. 1965, Rutgers, the State
University
Woong Joe Kang, Korea
History
B.A. 1961, Kankuk University, Korea
M.A. 1963, George Washington
University
Donald John Lofland, Virginia
Physics
B.S. 1966, George Washington
University
Frank Cameron Ludwig, Massachusetts
Psychology
B.S. 1942, Harvard University
M.A. 1949, Tufts University
M.S. 1959, Yeshiva University
Harold Irwin Mathis, Maryland
Psychology
B.A. 1961, M.A. 1967, Wayne State
University
Patsy Ann McLaughlin, District of
Columbia
Zoology
B.A. 1957, University of Washington
William Henry Mobley, District of
Columbia
History
B.A. 1953, Valdosta State College
M.A. 1961, Georgetown University
Dorothy Jean Morton, Maryland
Botany
B.S. 1958, District of Columbia
Teachers College
M.S. in S.T. 1962, M.S. 1964,
American University
Maxie Jo Nelson, Virginia
Biochemistry
B.S. 1962, Mary Washington College
of the University of Virginia
M.S. 1967, George Washington
University

Hugo Pineda, Virginia
History
B.A. in Govt. 1958, George Washington University
M.A. 1961, American University
George Rabchevsky, Maryland
Geology
B.S. 1961, American University
M.S. 1963, George Washington University
Steven Louis Rodis, Maryland
Biochemistry
B.A. 1963, Centre College of Kentucky
Anne Johnson Scepansky, Illinois
History
B.A. 1948, University of New Mexico
M.A. 1953, Mills College
Douglas Presley Scott, Virginia
Economics
B.A. 1964, George Washington University
Karl Ernst Seitz, Massachusetts
Germanic Languages and Literatures
Diplom Sportlehrer 1962, Deutsche Sporthochschule, Cologne, Germany
Abdelaleem Mohammad Abdelrahman
Sharshar, District of Columbia
Economics
B.Com. 1956, Cairo University, Egypt
M.A. 1963, Williams College
Gerald Siegel, Maryland
American Literature
B.A. 1963, Western Maryland College
M.A. 1966, Texas Christian University
Harold Kenneth Skramstad, Jr., District of Columbia
American Civilization
B.A. 1963, George Washington University

Morton Frank Taragin, District of Columbia
Physics
B.S. in Engr. 1965, George Washington University
Norman Glen Underwood, Virginia
Spanish Language and Literature
B.A. 1955, University of Arizona
Justin Leonard Voss, Missouri
Economics
B.A. 1962, M.A. 1964, University of Missouri
Bert Allan Watson, Texas
History
B.A. 1963, M.A. 1968, Baylor University
Sidney Weiner, Maryland
Mathematical Statistics
B.S. 1940, City College, New York
M.S. 1950, New York University
Richard Steven Weissberg, District of Columbia
Chemistry
B.S. 1963, George Washington University
Norman Alexander Yance, Virginia
History
B.S. 1954, Troy State College
B.D. 1956, Th.M. 1959, Southern Baptist Theological Seminary
Hedayat Yasaimaibodi, District of Columbia
Mathematical Statistics
B.S., M.S. 1966, George Washington University

MASTER OF SCIENCE

Peter Edward Borella, Virginia
Geology
B.A. 1966, University of Bridgeport
Roger Alan Budd, Virginia
Zoology
B.A. 1964, Hartwick College
Emma Jean Butler, District of Columbia
Biochemistry
B.A. 1944, Vanderbilt University
Jacqueline Virginia Carr, District of Columbia
Biochemistry
B.S. 1965, Shaw University
Charles Edward Champion, Maryland
Chemistry
B.S. 1965, Bethune-Cookman College

Harry Joseph Goett, District of Columbia
Geochemistry
B.S. 1967, American University
Basil Leon Hamilton, Jr., Virginia
Applied Statistics
B.A. in Ed. 1967, George Washington University
Tyler Henry Haynes, Jr., Maryland
Mathematics
B.A. 1949, B.S. 1953, M.A. 1961, University of Chicago
Barbara Jean Hodshon, Maryland
Biochemistry
B.S. 1965, University of Maryland

Stephen Nyaga Kimani, Pennsylvania
 Physiology
 B.S. 1965, Worcester Polytechnic
 Institute
 Richard Blake Loring, Maryland
 Geology
 B.A. 1967, George Washington
 University
 Dante James Picciano, Pennsylvania
 Zoology
 B.S. 1966, George Washington
 University

George Christopher Stephens, Virginia
 Geology
 B.S. 1967, George Washington
 University
 John Chao-hsiung Yun, Maryland
 Physiology
 B.S. 1963, Tunghai University, Taiwan
 Errol Zeiger, Maryland
 Microbiology
 B.S. 1960, City College, New York

DOCTOR OF PHILOSOPHY

Beatrice Stith Clark, Illinois
 French Language and Literature
 Dissertation: *The Development of the Nature-Man Motif in the Rustic Novel
 from Rousseau to Giono*
 B.A. 1941, West Virginia State College
 M.A. 1943, Atlanta University

John William Compton, District of Columbia
 Psychology
 Dissertation: *The Investigation of the Influence of Experimenter Outcome-bias
 and Experimenter Effect on Two Tasks when the Experimenter Receives Varied
 Information about His Subjects*
 B.A. 1962, American University
 M.A. 1965, George Washington University

David Firestone, Maryland
 Chemistry
 Dissertation: *Photochemical Rearrangement of Allyl 3,5-Dialkylphenyl Ethers*
 B.S. 1948, City College, New York
 M.S. 1951, Polytechnic Institute of Brooklyn

Linda Lou Gallo, Virginia
 Biochemistry
 Dissertation: *Studies on Triglyceride Resynthesis in Rat Intestine*
 B.S. 1959, West Virginia University
 M.S. 1963, George Washington University

Jon Charles Hagerty, District of Columbia
 Zoology
 Dissertation: *Electron Microscope and Electron Probe Studies on Chondrocyte
 Matrix Relationships in the Epiphyseal Cartilage of the Rat Tibia*
 B.S. 1963, M.S. 1965, George Washington University

Thomas Richard Harrison, Maryland
 Psychology
 Dissertation: *Persistence of Opinion Change Induced under Varying Conditions
 of Choice*
 B.A. 1949, Loyola College
 M.A. 1957, Boston College

Kenneth Bruce John, Pennsylvania

Psychology

Dissertation: *The Effects of Respiration and Unconditioned Stimulus Intensity in Human Cardiac Conditioning*

B.A. 1959, King's College, N. Y.

M.A. 1964, George Washington University

Gerard Louis Lagace, District of Columbia

Economics

Dissertation: *Tariff Structure: Partial Equilibrium Theory and the Kreinin Hypothesis*

B.S. 1958, M.A. 1962, Georgetown University

Ann Gilbert McDonald, Virginia

English Literature

Dissertation: *A Bibliography of the Periodical Contributions of Graham Greene*

B.A. 1961, Nazareth College of Rochester

M.A. 1962, Cornell University

Timothy Dean Mead, Pennsylvania

Political Science

Dissertation: *Party and Constituency: A Study of Diverse Party Patterns*

B.A. 1960, M.A. 1962, George Washington University

Christyna Emma Mecca, Maryland

Zoology

Dissertation: *Disc Electrophoretic Studies on Molecular Adaptation under Natural and Artificial Stress in the Sea Anemone *Diadumene leucolela* (Verrill) and Notes Concerning Its Natural History*

B.S. 1960, M.S. 1963, George Washington University

Stephen Charles Mohler, Virginia

Spanish American Literature

Dissertation: *The Poetic Style of León de Greiff*

B.A. in Ed. 1959, M.A. 1962, George Washington University

Wilbert Earl Nixon, District of Columbia

Biochemistry

Dissertation: *Studies on the Content of Subcellular Distribution of Biotin in Rat Liver*

Liver

B.S. 1952, Shaw University

M.S. 1960, American University

Robert Dale Phillips, Maryland

Mathematical Statistics

Dissertation: *On the Species Problem with an Information-theoretic Approach to Smoothing*

B.S. 1958, M.S. 1959, Oklahoma State University

Kay Frances Salyer Pitt, Idaho

Germanic Languages and Literatures

Dissertation: *The Annolied: A Structural Study*

B.A. 1960, University of Idaho

Richard Hunter Stephens, Maryland

International Relations

Dissertation: *Wealth and Power in Peru: Political Socialization and Behavior within the Peruvian Elite*

B.A. 1941, University of Utah

M.P.A. 1958, Harvard University

Jane Hillis Thayer, Maryland

Psychology

Dissertation: *The Relationship between Levels of Arousal and Responsiveness in Selected Schizophrenics and Normal Subjects*

B.A. 1952, Cornell University

M.A. 1956, George Washington University

Carolyn Dickson Whitfield, District of Columbia

Biochemistry

Dissertation: *Purification and Properties of N¹-Methyltetrahydropteroyltriglutamate-homocysteine Transmethylase from Escherichia coli*

B.A. 1963, Wellesley College

M.S. 1965, University of Chicago

SCHOOL OF MEDICINE

DOCTOR OF MEDICINE

Student Marshal: Beverly Ann Oliphant

John David Anderson, Texas

Jeffrey Roy Ashkin, New York

B.A. 1965, Clark University

Mark Jay Atkins, New Jersey

B.A. 1966, University of Rochester

Michael Berger, New York

B.S. 1965, Tufts University

Warren Richard Berrie, California

B.A. 1964, Stanford University

Frederick Charles Blades, New Jersey

B.A. 1965, University of Maine

Susan Montella Bland, Maryland

B.S. 1965, George Washington University

Matthew David Blum, Pennsylvania

B.A. 1964, LaSalle College

Don Howard Bodley, District of Columbia

B.S. 1965, Montana State University

Frank John Boruch, New Jersey

B.S. 1965, St. Peter's College, N.J.

James Gelston Boyd, Jr., Massachusetts

B.A. 1964, Boston University

Nancy Dee Briggs, Virginia

B.A. 1964, Sweet Briar College

Brooks Gideon Brown III, Maryland

B.A. 1965, Washington and Lee University

Richard Bruce Brown, New York

B.S. 1965, Tufts University

Richard Bowman Cannon, District of Columbia

B.A. 1965, University of Utah

Michael Allen Chorches, Connecticut

B.A. 1965, Boston University

Martin Irvin Cohen, Maryland

B.A. 1965, Adelphi University

Paul Joseph Corso, Jr., Virginia

B.A. 1966, George Washington University

Kenneth Clark Cummings, Jr., California

B.S. 1965, George Washington University

Paul Hartman D'Amato, Maryland

(With Distinction)

B.A. 1965, Rutgers, the State University

Richard Nelson Dove, Maryland

B.A. 1965, Columbia University

Depue Hazen Duffey, Jr., Virginia

B.S. 1965, American University

Arthur Jackson Speer Eberdt, Virginia

B.A. 1959, Duke University

Daniel Howard Eudaily, Montana

B.S. 1966, Montana State University

Jose Manuel Fabrega, Panama

Bethanne Foley, District of Columbia

B.A. 1963, Chestnut Hill College

Kenneth Jay Forman, Pennsylvania

B.A. 1964, University of Pennsylvania

Gary Michael Franklin, Maryland

B.A. 1965, Franklin and Marshall College

Leonard Malcolm Friedman, Maryland

B.A. 1965, University of Pennsylvania

Stephen Frist, Maryland

Peter Nicholas Giovan, California

B.A. 1965, Occidental College

- Robert David Goldhamer, District of Columbia
B.S. 1965, George Washington University
- Michael G. Goldstein, California
- Michael Richard Greenberg, Pennsylvania
- Jay Robert Grossman, Virginia
B.A. 1965, Temple University
- Leonard Jesse Grossman, New Jersey
B.A. 1965, Vanderbilt University
- Patricia Frances Heldman, California
B.A. 1965, University of California, Berkeley
- Michael Harold Hitchcock, Minnesota
B.A. 1965, University of Minnesota
- Brian Charles Holober, Maryland
B.A. 1966, George Washington University
- Michael Sidney Horowitz, New York
(With Distinction)
B.A. 1965, Colgate University
- Heide Billes Horaley, Virginia
B.A. 1960, Pasadena City College
B.S. 1962, University of California, Berkeley
- Allen Willis Jackson, Maryland
B.S. 1965, George Washington University
- Richard Matthias Jacoby, District of Columbia
B.E.E. 1964, University of Virginia
- Edward Gabbott Jenkins, Virginia
B.S. 1965, University of Utah
- Robert Wolfe Kahn, New York
B.A. 1965, Kenyon College
- Edward Graeme Koch, Virginia
B.A. 1964, M.A. 1965, University of California, Los Angeles
- Martin Edward Kodish, Virginia
B.S. 1966, University of Akron
- Irwin Henry Koff, New York
(With Distinction)
B.A. 1965, Hofstra University
- Harry Alan Kriegsfeld, Arizona
B.A. 1965, University of Pennsylvania
- Gary Kim Langstaff, Colorado
B.A. 1962, University of Colorado
- David Edmund Larson, Minnesota
B.A. 1964, Dartmouth College
- Peter Howard Levine, Connecticut
B.S. 1963, Massachusetts Institute of Technology
- Lawrence Michael Levinson, Virginia
B.A. 1965, Cornell University
- Robert Alan Lieberman, Virginia
B.S. 1965, City College, New York
- Frederick Alton Lloyd, Jr., Massachusetts
B.A. 1965, University of Massachusetts
- Richard Sheldon Margolis, Virginia
B.S. 1965, Pennsylvania State University
- Thomas Clinton McNamara, Virginia
B.A. 1965, University of Virginia
- Robert Millman, Maryland
B.A. 1966, George Washington University
- John Wayne Mitchell, Jr., Virginia
B.A. 1965, Duke University
- Robert William Murray, Virginia
B.A. 1965, Stanford University
- David Vance Noonan, Virginia
B.A. 1966, George Washington University
- Beverly Ann Oliphant, Maryland
(With Distinction)
B.S. 1960, Mississippi State University
M.S. 1964, University of Florida
- Ronald Julian Orleans, Maryland
B.A. 1965, Franklin and Marshall College
- Robert Clayton Pace, Maryland
B.A. 1965, University of Utah
- Robert Harry Patterson, Virginia
B.A. 1965, Bridgewater College
- Thomas Summers Reich, Virginia
- Robert Michael Roberts, Virginia
B.A. 1965, Lafayette College
- Douglas Neil Robins, Maryland
B.S. 1965, Washington and Lee University
- Emilio Jesus Rodriguez-Viera, Puerto Rico
B.A. 1965, Boston University
- David Matthew Rubenstein, Connecticut
B.A. 1964, University of Minnesota
- Peter Gordon Sack, New Jersey
B.A. 1965, Columbia University
- Marc Roger Sanders, Oregon
B.S. 1964, University of Oregon
- John Edward Sawicki, Connecticut
B.S. 1965, Trinity College, Conn.
- Ronald Joseph Scelfo, New Jersey
B.S. 1965, Tufts University
- Robert Harris Schulman, New York
B.A. 1965, Yeshiva University
- Frederic Tovi Schwartz, New York
B.A. 1965, American International College
- William Joel Schwartz, New York
B.A. 1965, Yeshiva University
- Thomas Gordon Sinderson, Maryland
B.A. 1965, Emory University

Eugene Lewis Speck, Virginia
 B.A. 1958, Brandeis University
 M.S. 1961, University of Massachusetts
 Ph.D. 1966, George Washington University
 Paul Stephen Spiegler, District of Columbia
 B.A. 1960, New York University
 H. Eric Stern, Virginia
 B.A. 1965, Brooklyn College
 Henry Michael Storper, Virginia
 B.A. 1965, New York University
 Joseph Meyer Strauch, Maryland
 B.A. 1965, Yeshiva University
 Swen Russel Swensen, Utah
 B.A. 1963, Brigham Young University
 M.S. 1968, George Washington University
 Luke Edward Terry, Jr., West Virginia
 B.S. 1965, College of William and Mary
 David Alan Thompson, Pennsylvania
 B.S. 1965, Elizabethtown College

George William Tietjen, New York
 (With Distinction)
 B.A. 1965, Rutgers, the State University
 Anthony John Tortolani, New York
 B.S. 1965, Fordham University
 Charles Richard Tuegel, Virginia
 B.A. 1966, George Washington University
 Neil Joseph Weiner, New York
 B.A. 1965, University of Pennsylvania
 Edmund Anthony Panther West, Virginia
 B.A. 1965, New York University
 Ralph Robinson Wolf III, New York
 B.A. 1965, Yale University
 Charles Harold Wollack, Maryland
 B.A. 1959, Temple University
 M.A. 1961, Ph.D. 1963, Princeton University
 Ira Gene Wong, Oregon
 B.A. 1963, University of Oregon

NATIONAL LAW CENTER

JURIS DOCTOR

Student Marshal: Douglas George Robinson

Martin Abramson, New York
 (With Honors)
 B.E. 1965, City College, New York
 Frederick Lynn Alexander, Virginia
 B.A. 1961, Cornell University
 Gary Ross Allen, District of Columbia
 (With Honors)
 B.A. 1963, Northwestern University
 David Elsworth Anderson, Virginia
 (With Honors)
 B.S. in A.E. 1954, West Virginia University
 M.S. in Ae. 1958, Ae.E. 1960, California Institute of Technology
 Robert Arthur Bartlett, New York
 (With Honors)
 B.A. 1966, Yale University
 Leon Irwin Baumgarten, Pennsylvania
 B.A. 1966, Pennsylvania State University
 Joseph Norman Beecroft, Virginia
 B.A. 1965, Brigham Young University
 Bruce Charles Bereano, New York
 B.A. 1966, George Washington University

John Wolf Berkey, Jr., North Dakota
 B.A. 1966, North Dakota State University
 Robert Alfredo Bernstein, Maryland
 B.A. 1966, Pennsylvania State University
 Madeleine Sophie Bial, District of Columbia
 B.A. 1964, Miami University
 John James Blanchard, Illinois
 (With Honors)
 B.S. 1966, Seton Hall University
 John William Blouch, Indiana
 (With Honors)
 B.A. 1962, Yale University
 Ronnie Blumenthal, New Jersey
 B.A. 1966, George Washington University
 Alvin Paul Blyer, New York
 (With Honors)
 B.A. 1966, Brooklyn College
 Henry William Bogsch, District of Columbia
 B.S. in F.S. 1966, Georgetown University

- Burt Alan Braverman, New York
 (With Honors)
 B.A. 1966, Miami University
 Joseph Frederick Breimayer, District of
 Columbia
 B.E.E. 1965, University of Detroit
 Lloyd Eugene Brelsford, Virginia
 (With Honors)
 B.A. 1963, Washington State
 University
 Thomas Stephen Brigham, District of
 Columbia
 (With Honors)
 B.A. 1966, Fresno State College
 Warner Francis Brundage, Jr., Maryland
 (With Honors)
 B.A. 1966, University of Southern
 California
 Arthur Bates Butler III, Arizona
 B.A. 1966, Trinity University
 Joseph Edward Caldwell, New Mexico
 B.A. 1966, Colorado College
 Geoffrey David Cant, Maryland
 (With Honors)
 B.S. 1959, U.S. Naval Academy
 Don Stirling Carpenter, Pennsylvania
 B.A. 1966, Pennsylvania State
 University
 Carl Wesley Carson, District of
 Columbia
 (With Honors)
 B.A. 1961, Drew University
 M.A. 1962, Tufts University
 Edith Jane Carson, North Carolina
 B.A. 1966, Duke University
 Lawrence Jay Chandler, New York
 B.A. 1966, Boston University
 Joseph Philip Charney, New York
 B.A. 1966, Brooklyn College
 Paul William Chemnick, Arizona
 (With Honors)
 B.A. 1966, George Washington
 University
 John Michael Cleary, Virginia
 (With Honors)
 B.A. 1965, Catholic University of
 America
 John Peter Clum, Maryland
 (With Honors)
 B.A. 1966, George Washington
 University
 Charles Windham Collett, District of
 Columbia
 B.A. 1966, George Washington
 University
 Gary Randolph Comstock, Virginia
 (With Honors)
 B.S. 1964, Brigham Young University
 Elaine Roemisch Crane, Ohio
 (With Honors)
 B.A. 1966, Vassar College
 Arthur Ray Crawford, Virginia
 B.S. 1966, Ohio Northern University
 John Knowles Crummey, Maryland
 B.A. 1962, American University
 Andrew Cook Culbert, Massachusetts
 B.A. 1966, University of
 New Hampshire
 Gary Miles Cunningham, Tennessee
 B.A. 1966, University of Michigan
 Michael Joseph Daly, Virginia
 B.A. 1966, Bucknell University
 Catherine Jane Damme, Nebraska
 B.A. 1966, Mount Holyoke College
 Michael Rhodes Davis, New York
 B.S. 1965, Rochester Institute of
 Technology
 Joseph Henry Dettmar, Virginia
 B.A. 1966, LaSalle College
 Joel Paul Dictrow, New York
 (With Honors)
 B.A. 1966, New York University
 Michael William Dolan, Virginia
 (With Honors)
 B.A. 1964, University of Kansas
 William John Dowell, Virginia
 (With Honors)
 B.A. 1966, George Washington
 University
 James Thomas Duff, Maryland
 B.B.A. 1966, George Washington
 University
 Craig Burgett Dunbar, Virginia
 B.A. 1966, Texas A&M University
 John Stephan Ebel, Virginia
 (With Honors)
 B.S. 1966, Washington University
 Robert Eugene Eisenbud, New York
 B.A. 1965, Washington College
 Saul Elbaum, Maryland
 B.E.E. 1965, City College, New York
 John Walter English, Virginia
 (With Honors)
 B.A. 1966, University of Michigan
 Leslie Gene Fleet, Virginia
 (With Honors)
 B.A. 1965, American University
 Charles Henry Fleischer, District of
 Columbia
 (With Honors)
 B.A. 1966, University of Rochester

- Joel Francis Gardiner, Virginia
(With Honors)
B.A. 1966, University of Massachusetts
- Robert Steven Gelman, New York
B.A. 1966, Brooklyn College
- Stephen Thomas Gillingham, Pennsylvania
B.A. 1966, Juniata College
- Robert Efrom Glasgow, Oregon
(With Honors)
B.A. 1966, George Washington University
- Daniel Robert Glickman, Kansas
(With Honors)
B.A. 1966, University of Michigan
- Steven Lee Godwin, Nevada
B.S. 1966, Brigham Young University
- Charles Paul Gogolak, District of Columbia
(With Honors)
B.A. 1966, Princeton University
- Richard I. Goldsand, Virginia
(With Honors)
B.A. 1966, George Washington University
- Philip Robert Goldsmith, Virginia
(With Honors)
B.S. 1966, Pennsylvania State University
- Bruce Goldstein, Virginia
(With Honors)
B.A. 1966, University of North Carolina at Chapel Hill
- Kenneth Webster Goshorn, Pennsylvania
(With Honors)
B.A. 1966, Carleton College
- James Evan Goulding, Virginia
B.S. 1965, Brigham Young University
- Lawrence Gilbert Graev, New York
(With Honors)
B.S. 1966, Cornell University
- Roger Everett Greenberg, Virginia
B.A. 1966, University of Maryland
- Jeffrey Wayne Grove, Maryland
(With Honors)
B.A. 1965, Juniata College
- Clark Sanders Gruening, Alaska
B.A. 1965, University of Oregon
- Patricia Dorothy Gurne, District of Columbia
B.A. 1965, MacMurray College
- David Hillel Guthman, California
B.A. 1963, California State College at Long Beach
M.P.A. 1965, University of Southern California
- Thomas West Hammond III, Virginia
(With Honors)
B.B.A. 1966, George Washington University
- Stephen Mark Harmsen, District of Columbia
B.S. 1966, University of Utah
- Bruce Burleson Hart, Maryland
(With Honors)
B.S. 1962, Western Michigan University
- Pierre Michael Hartman, Virginia
B.A. 1958, University of Colorado
- Michael David Hausfeld, Virginia
(With Honors)
B.A. 1966, Brooklyn College
- Michael Arnold Hertzberg, District of Columbia
B.A. 1966, Colgate University
- Charles Andrew Hollander, New York
B.A. 1966, University of Pittsburgh
- Michael Stephen Hollins, New York
B.A. 1966, Washington and Jefferson College
- Michael Joseph Holloran, District of Columbia
B.A. 1966, George Washington University
- Harold Huberfeld, Maryland
B.S. in E.E. 1965, Drexel Institute of Technology
- Raymond Morrow Hunter, Arizona
B.A. 1966, Stanford University
- William Earl Isaef, Virginia
(With Honors)
B.S. 1966, University of Nevada
- Robert Lahr James, Maryland
B.A. 1966, Cornell University
- Robert Alexander Johnson, District of Columbia
B.A. 1957, M.A. 1961, Marshall University
- Wayne Merrill Johnson, Maine
B.A. 1965, University of Maine
- Robert Barry Joselow, New York
B.A. 1966, New York University
- Robert Eugene Josten, Virginia
B.A. 1964, Morningside College
- Stephany Louise Joy, New York
B.S. 1963, Le Moyne College
M.A. 1965, George Washington University
- Tobey Walter Kaczensky, District of Columbia
(With Honors)
B.A. 1966, Harvard University

- Bertrand Jay Kahn, New York
B.A. 1966, George Washington University
- Paul Jay Kaller, Virginia
(With Honors)
B.A. 1966, Syracuse University
- Raymond Allen Keeney, Connecticut
B.A. 1965, Yale University
- Thomas Daniel Kiley, District of Columbia
(With Honors)
B.S. 1965, Pennsylvania State University
- Donald Frank Klasic, Pennsylvania
(With Honors)
B.A. 1966, Youngstown University
- Carol Cole Kleinman, Virginia
(With Honors)
B.A. 1966, Northwestern University
- Louise Osborne Knight, Missouri
(With Honors)
B.A. 1966, Wellesley College
- John Richard Knop, Virginia
(With Honors)
B.A. 1966, Indiana University
- Charles Howard Koch, Jr., Maryland
(With Honors)
B.A. 1966, University of Maryland
- Jason David Kogan, Connecticut
B.A. 1966, Pennsylvania State University
- Charles Alfred Koons, Jr., Connecticut
B.A. 1965, Cornell University
- Bruce Stephen Kramer, New Jersey
(With Honors)
B.A. 1966, Washington and Lee University
- James Marshall Kramon, New York
(With Honors)
B.S. 1966, Carnegie-Mellon University
- Marshall Edward Kresman, Pennsylvania
B.S. 1966, Drexel Institute of Technology
- Barry Howard Krinsky, New York
(With Honors)
B.A. 1966, Brooklyn College
- Prithvi Chand Lall, District of Columbia
B.S. 1950, Government College, Hoshiarpur, India
- M.S. 1954, Panjab University, India
- Ph.D. 1962, Oregon State University
- Kenneth Alan Latimer, Maryland
(With Honors)
B.S. 1966, University of Wisconsin
- Theodore Moreau Leary, Jr., District of Columbia
(With Honors)
B.A. 1966, Harvard University
- Wayne Lewis Lesser, New Jersey
B.A. 1966, Lafayette College
- Roy Paul Lessy, Jr., Pennsylvania
B.A. 1966, Franklin and Marshall College
- Richard Andrew Levie, New Jersey
B.A. 1966, Dickinson College
- Theodore Alan Levine, New Jersey
(With Honors)
B.A. 1966, Rutgers, the State University
- Marshall Harvey Lichtenstein, Georgia
(With Honors)
B.A. 1966, University of North Carolina at Chapel Hill
- Michael Herbert Lipson, Connecticut
(With Honors)
B.A. 1966, University of Connecticut
- Robert John Logan, District of Columbia
B.S. 1966, University of Utah
- Darrel Lee Longest, Maryland
B.A. 1966, Georgetown University
- Ira Saul Loss, Connecticut
(With Honors)
B.A. 1966, University of Connecticut
- Michael Ira Luber, Pennsylvania
B.A. 1966, Pennsylvania State University
- Mark Ira Lurie, District of Columbia
B.A. 1966, Brown University
- Joseph John Malandra, Jr., California
B.A. 1962, University of Maryland
- David Elia Manoogian, Illinois
B.A. 1966, Dickinson College
- Eric Bruce Marcy, Virginia
B.A. 1966, George Washington University
- Robert Stephen Marks, New York
B.A. 1966, Brown University
- Allan A. Martin, New York
(With Honors)
B.B.A. 1966, City College, New York
- Roy I. Martin, New York
B.B.A. 1966, Adelphi University
- William Jacko Massie, Jr., Connecticut
(With Honors)
B.S. 1968, Morehouse College
- James Virgil Mattingly, Jr., District of Columbia
B.B.A. 1966, George Washington University

- Timothy Bernard Matz, District of Columbia
(With Honors)
B.A. 1966, University of Virginia
- William Bruce Mayfield, Virginia
B.A. 1966, Yale University
- Robert Lawrence McCaffrey, Jr., Illinois
B.A. 1966, Colgate University
- Lynne Church McCoy, District of Columbia
B.A. 1966, Goucher College
- Jeffrey Stephen Mednick, Maryland
B.S. in M.E. 1965, Drexel Institute of Technology
- Michael Stein Meisel, Virginia
B.A. 1966, Miami University
- Thomas Paul Miano, Connecticut
B.A. 1966, Providence College
- Warren Lloyd Miller, Virginia
(With Honors)
B.A. 1966, American University
- William Everett Morley, Delaware
(With Honors)
B.A. 1964, University of Maryland
- M.B.A. 1966, George Washington University
- Samuel Wheeler Morris, Jr., Pennsylvania
B.A. 1966, Harvard University
- Kenneth Scott Muldoon, New York
B.A. 1966, Brown University
- Paul Gunnar Nelson, New York
B.A. 1966, Colgate University
- Richard Clark Nelson, District of Columbia
B.A. 1966, Clark University
- Terry Arnold Newendorp, Virginia
(With Honors)
B.S. in Ch.E. 1966, Purdue University
- Alan Lloyd Newman, Maryland
(With Honors)
B.S. in E.E. 1965, University of Maryland
- Robert Charles Ollman, New York
B.A. 1966, Colgate University
- T. Rodney Oppmann, Ohio
B.A. 1965, Princeton University
- William Church Osborn, Pennsylvania
B.A. 1966, Princeton University
- Thomas Churchill Palmer, District of Columbia
B.A. 1966, Howard University
- Thomas Gerald Parachini, Virginia
B.A. 1966, Michigan State University
- Louis Ira Parley, New York
(With Honors)
B.A. 1966, City College, New York
- Sherman Odell Parrett, Virginia
(With Honors)
B.S. in E.E. 1965, University of Cincinnati
- Robert Nathan Pass, Rhode Island
(With Honors)
B.A. 1966, Brown University
- Roger Allan Perkins, Maryland
(With Honors)
B.A. 1964, Pennsylvania State University
- Fred Anderson Phelps, Virginia
(With Honors)
B.S. 1961, Pennsylvania State University
- Kenneth Roland Pike, New Jersey
(With Honors)
B.A. 1966, Cornell University
- William Joel Poltarak, New York
B.A. 1966, Pennsylvania State University
- Thomas Andrew Pursley III, New York
B.A. 1966, Colgate University
- John Chester Pyles III, District of Columbia
(With Honors)
B.A. 1965, M.B.A. 1966, Dartmouth College
- Gary G. Quintiere, Virginia
(With Honors)
B.A. 1966, Lafayette College
- Richard Michael Resnik, Virginia
(With Honors)
B.A. 1966, Fairleigh Dickinson University
- Joseph Michael Revesz, Virginia
(With Honors)
B.S. in E.E. 1965, Newark College of Engineering
- Douglas George Robinson, Virginia
(With Highest Honors)
B.A. 1965, University of Washington
- Martin Howard Rogol, New York
B.A. 1966, University of Cincinnati
- Michael Barry Rosenberg, New York
(With Honors)
B.A. 1966, Brooklyn College
- Stephen Charles Royer, District of Columbia
B.A. 1966, George Washington University
- David Rutstein, Pennsylvania
(With Honors)
B.A. 1966, University of Pennsylvania

- David Sapadin, New York
(With Honors)
B.A. 1965, Brooklyn College
- John Philip Sauntry, Jr., Washington
B.S. in F.S. 1965, Georgetown
University
- William A. Schainker, District of
Columbia
B.S. in B.A. 1966, Washington
University
- Charles Kane Schanker, Virginia
(With Honors)
B.B.A. 1966, George Washington
University
- Michael Paul Schaum, New York
B.A. 1966, University of Michigan
- Myles Richard Scheer, New Jersey
B.A. 1966, Rutgers, the State
University
- Richard Benjamin Schiff, Virginia
(With Honors)
B.A. 1966, University of Michigan
- Jeffrey Hugh Schneider, New York
(With Honors)
B.A. 1966, New York University
- Lenore Bardon Schneiderman, Virginia
B.A. 1966, Hunter College
- David Elliot Schreiber, New Jersey
B.A. 1966, University of Virginia
- Richard Warren Schroeder, Virginia
B.S. 1966, Wisconsin State University,
La Crosse
- Daniel Carl Schwartz, District of
Columbia
(With Highest Honors)
B.A. 1965, Stanford University
- David Ira Schwartz, New York
B.Ch.E. 1966, Pratt Institute
- M. Gerald Schwartzbach, Pennsylvania
B.A. 1966, Washington and Jefferson
College
- Lester Barry Seidel, Maryland
(With Honors)
B.A. 1966, University of Michigan
- Dorothy Davidson Sellers, District of
Columbia
(With Honors)
B.A. 1965, Stanford University
- James Vincent Setta, Virginia
B.A. 1966, University of Maryland
- Elliott Charles Shapiro, New York
B.A. 1966, Syracuse University
- Edward Felix Shay, Pennsylvania
B.A. 1966, Colgate University
- Wallace Walter Sherwood, New York
B.A. 1966, St. Vincent College
- Frank Stanton Simons, Jr., District of
Columbia
(With Honors)
B.A. 1966, University of Colorado
- Thomas Michael Singman, District of
Columbia
(With Honors)
B.A. 1966, University of Michigan
- Alfred August Siss, Jr., New Jersey
B.A. 1966, Gettysburg College
- Richard Paul Slivka, Virginia
(With Honors)
B.S. 1966, Arizona State University
- Jerry Morgan Smedley, Maryland
B.A. 1964, Indiana University
- Marshall Avrum Snider, Illinois
(With Honors)
B.A. 1966, Washington University
- Richard Ian Solomon, Michigan
(With Honors)
B.A. 1966, University of Michigan
- Gerald Ira Sommer, New York
B.A. 1966, American University
- Gaylin Gramse Soponis, Massachusetts
(With Honors)
B.A. 1966, Mount Holyoke College
- Mento Anthony Soponis, Virginia
(With Honors)
B.A. 1966, Princeton University
- Virginia Ann Spiegel, District of
Columbia
B.A. 1966, Mount Holyoke College
- Thomas John Steich, Ohio
B.A. 1966, George Washington
University
- Barry Gene Stien, Connecticut
B.A. 1966, Temple University
- Andrew Roy Stoller, New York
B.S. 1966, Cornell University
- Peter Harry Stolzar, New York
(With Honors)
B.A. 1966, University of Rochester
- Seth Stopek, Virginia
(With Honors)
B.A. 1966, Syracuse University
- Terrance E. Swanson, Maryland
B.A. 1963, Coe College
- Dennis Elmo Talbert, Jr., Virginia
B.S. 1961, Virginia Polytechnic
Institute
- Henry Willard Tarring II, Virginia
(With Honors)
B.Ch.E. 1959, Rensselaer Polytechnic
Institute
- Dennis Howard Taylor, Virginia
(With Honors)
B.A. 1966, Colgate University

Martin Gibson Taylor III, Kentucky
 B.S. 1964, Eastern Kentucky University
 Bruce Jay Teck, District of Columbia
 B.S. 1957, University of North
 Carolina at Chapel Hill
 Lynn Evan Thomas, Idaho
 B.A. 1961, Idaho State University
 M.S. 1964, Boston University
 Ronald Irwin Tish, New York
 (With Honors)
 B.A. 1966, Brooklyn College
 Robert Max Tobias, Virginia
 (With Honors)
 B.A. 1965, University of Michigan
 Wilson John Trombley, Virginia
 B.A. 1966, Fairfield University
 Thomas Adkins Turner, Jr., Georgia
 B.E.E. 1964, Georgia Institute of
 Technology
 Kenneth Richard Umans, New York
 B.A. 1966, Pennsylvania State
 University
 James Donald Vitarello, New York
 B.A. 1966, University of Toledo
 Douglas Alan Warshof, Virginia
 (With Honors)
 B.A. 1966, Boston University
 George Daniel Webb II, Virginia
 (With Honors)
 B.A. 1965, Michigan State University
 Martin Howard Weisfuse, New York
 (With Honors)
 B.A. 1966, Brooklyn College

Kenneth Robert West, Maryland
 B.B.A. 1966, George Washington
 University
 Stephen Hennington Whilden, California
 B.A. 1963, San Francisco State College
 Perry Albert White, Jr., Virginia
 B.A. 1966, Denison University
 Sherwood Skelton Willard, Connecticut
 B.A. 1966, University of Virginia
 John Franklin Wilson III, Virginia
 (With Honors)
 B.A. 1962, Colgate University
 John Harper Witmer, Jr., Maryland
 (With Honors)
 B.A. 1962, Pennsylvania State
 University
 Sue Anne Wolff, Ohio
 (With Honors)
 B.A. 1961, Trinity College, D.C.
 James Ralph Wright, Virginia
 (With Honors)
 B.S. 1966, Ohio State University
 Alexander B. Younger, District of
 Columbia
 (With Honors)
 B.A. 1965, University of Pennsylvania
 Ira Louis Zankel, New York
 B.A. 1966, Brooklyn College
 Louis Michael Zigman, Virginia
 (With Honors)
 B.S. 1966, New York University

MASTER OF LAWS

David Bender, Rhode Island
 B.S. 1961, Brown University
 LL.B. 1968, University of Pennsylvania
 Steven Leslie Briggerman, District of
 Columbia
 B.A. 1965, University of Chicago
 J.D. 1968, George Washington
 University
 Thomas Joseph Costa, Jr., New Jersey
 B.A. 1964, Roanoke College
 LL.B. 1967, Catholic University of
 America
 Joseph William Dellapenna, Virginia
 B.B.A. 1965, University of Michigan
 J.D. 1968, Detroit College of Law
 Marion Altus Fallwell, Virginia
 B.A. 1961, LL.B. 1964, Baylor
 University
 Gordon Barry Fields, Virginia
 B.A. 1962, Reed College
 LL.B. 1965, University of Oregon

David Kesler Fromme, Kansas
 B.A. 1962, J.D. 1965, Washburn
 University of Topeka
 Richard Harold Gins, Maryland
 B.A. 1964, University of North
 Carolina at Chapel Hill
 J.D. 1967, George Washington
 University
 Frank Davis Hill, Texas
 B.B.A. 1963, University of Oklahoma
 LL.B. 1966, University of Texas at
 Austin
 Roger Keith Hoover, New Jersey
 B.A. 1961, LL.B. 1964, Rutgers, the
 State University
 Richard Michael Horwood, District of
 Columbia
 B.A. 1962, Colgate University
 LL.B. 1965, University of
 Pennsylvania

Gerald William Hyland, Virginia
 B.S. 1959, College of the Holy Cross
 LL.B. 1962, Georgetown University
 Lawrence Levy, Virginia
 B.A. 1963, University of Pennsylvania
 LL.B. 1966, Boston University
 Walter Laughn Lewis, Virginia
 B.A. 1947, LL.B. 1950, University of
 Virginia
 Sharon Kay Lieblich, Virginia
 B.A. 1963, Barnard College
 LL.B. 1966, Harvard University
 Robert Duane Linder, Virginia
 B.A. 1954, J.D. 1959, University of
 Iowa
 M.B.A. 1961, Harvard University
 Stanley Glen Mazaroff, District of
 Columbia
 B.A. 1960, LL.B. 1965, University of
 Maryland
 Edward Garrison Neal, Maryland
 B.A. 1962, Florida State University
 LL.B. 1966, Eastern College

Roy Nerenberg, Maryland
 B.S. 1959, University of Pennsylvania
 LL.B. 1962, Temple University
 Carlton Thomas Normand, Texas
 B.A. 1963, University of Texas at
 Austin
 LL.B. 1964, Baylor University
 Thomas William Reilly, Virginia
 B.A. 1954, LL.B. 1956, St. John's
 University, N.Y.
 Peter John Romeo, Virginia
 B.S. in B.A. 1964, Georgetown
 University
 J.D. 1967, George Washington
 University
 James Garrett Tigner, Virginia
 B.S. 1961, New Mexico State
 University
 LL.B. 1965, Baylor University
 Matthew Joseph Wheeler, Jr., Illinois
 B.S. 1961, Loyola University, Ill.
 LL.B. 1964, John Marshall Law School
 Donald Ray Wilson, Virginia
 B.A. 1960, LL.B. 1964, University of
 Missouri

MASTER OF COMPARATIVE LAW

Norihiro Takeuchi, Japan
 B.A. 1960, Tokyo University of
 Foreign Studies, Japan
 LL.M. 1962, Hitotsubashi University,
 Japan

Oung Myint Tun, Virginia
 B.A. 1956, LL.B. 1960, Rangoon
 University, Burma

DOCTOR OF JURIDICAL SCIENCE

John Luis Antonio de Passalacqua, Virginia
 International Law
 Dissertation: *A Study of Intervention in Public International Law*
 B.A. 1961, University of Puerto Rico
 LL.B. 1964, Catholic University of Puerto Rico
 LL.M. 1965, George Washington University

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

Student Marshal: Michael William Rohrer

BACHELOR OF SCIENCE (Civil Engineering)

Jorge Hidalgo, Virginia

Robert Joseph Keltie, Virginia
 (With Distinction)

BACHELOR OF SCIENCE (Electrical Engineering)

- | | |
|---|--|
| Robert Stephan Bugash, District of Columbia | Joseph Earl Nance, Virginia |
| Harrison Powell Butturff, Virginia | Philip Yoon-Lim Ong, District of Columbia |
| James Melbourne Chandler, Virginia | Thomas Joseph Padgett, Maryland |
| Richard Michael Curtin, Virginia | Michael William Rohrer, District of Columbia |
| Matthew Storch DeMaria, Maryland | (With Distinction) |
| William Valentine Goodell, Virginia | Curtis Alan Schroeder, New York |
| Donald Lee Howard, Virginia | George Gregory Stellar, District of Columbia |
| George Christopher Kotsakis, Maryland | Donald Joseph Vespa, New York |
| John Paul Liebesny, Virginia | |
| John Edward McKeever, Maryland | |

BACHELOR OF SCIENCE (Mechanical Engineering)

- | | |
|--------------------------------------|--|
| Joseph Maughan Howell III, Virginia | Roger Detre Rafler, Virginia |
| Louis Alexander Kouts, Virginia | Karen Sue Spindel, New Jersey |
| Yigal Pisetzky, District of Columbia | Alexander Leslie Sutherland, Jr., New York |
| Gary Lynn Poush, Virginia | |

MASTER OF ENGINEERING ADMINISTRATION

- | | |
|--|--|
| William Eugene Bigler, Jr., Maryland | Thomas Wesley Mason, District of Columbia |
| B.S. in E.E. 1961, University of Maryland | B.A. 1961, University of Kansas |
| Frank Donald Brouse, Maryland | Paul Francis McCaul, California |
| B.S. in M.E. 1961, Bucknell University | B.E.E. 1962, New York University |
| Robert Roland Caron, Massachusetts | J.D. 1966, George Washington University |
| B.S. 1961, U.S. Coast Guard Academy | Jack Louis McGee, Maryland |
| James Wilson Colby, Virginia | B.S. 1958, University of Oklahoma |
| B.S. in C.E. 1957, Norwich University | Melvin Leon Moore, West Germany |
| Milton Paul Criswell, Maryland | B.S. 1962, University of Oklahoma |
| B.S. in C.E. 1953, University of Denver | James David Morrell, Virginia |
| Robert Harrison Crosby, Maryland | B.S. in E.E. 1962, Virginia Polytechnic Institute |
| B.S. in Marine and Electrical Engineering 1961, Massachusetts Maritime Academy | Francis Joseph O'Brimski, Maryland |
| Kerin Lee Dryden, Maryland | B.S. 1959, University of Maryland |
| B.S. in M.E. 1958, University of Kansas | Kenneth Otto Olsen, Maryland |
| Arthur Burchell Follansbee, Virginia | M.E. 1960, Stevens Institute of Technology |
| B.S. 1961, Northeastern University | Paul Carl Rinderle, Virginia |
| James Christopher Fowlkes, Maryland | B.E.E. 1959, Gannon College |
| B.S. in E.E. 1958, West Virginia University | Richard Lawrence Rumble, Maryland |
| Owen Edward Jackson, Maryland | B.E.E. 1959, University of Virginia |
| B.S. in E.E. 1963, Howard University | Harry Robert Sauberman, Virginia |
| Donald Edward Jamison, Maryland | B.A. 1961, B.E.E. 1961, M.E.E. 1964, New York University |
| B.S. in E.E. 1957, University of Miami | Alfred Rudolf Schuler, Virginia |
| Jayward Harold Margolis, Pennsylvania | B.E.E. 1962, M.E.E. 1963, Ph.D. 1965, University of Pennsylvania |
| B.S. in I.E. 1961, Pennsylvania State University | Marc Jay Selig, Maryland |
| Donald Jack Martin, Maryland | B.S. in E.E. 1959, Fairleigh Dickenson University |
| B.M.E. 1962, Cornell University | Mohindar Iqbal Singh, India |
| | B.S. in M.E. 1962, Howard University |

Larry Wray Sumney, Maryland
B.S. 1962, Washington and Jefferson
College

Jack Ronald Warner, District of
Columbia
B.S. 1959, Rensselaer Polytechnic
Institute

MASTER OF SCIENCE

Lawrence James Arena, Maryland
B.S. in E.E. 1960, Newark College of
Engineering
Jorge Ignacio Auñón, Virginia
B.S. in Engr. 1967, George
Washington University
Melvin Claire Carlson, Maryland
B.S. 1959, University of South
Dakota
B.S. in E.E. 1961, University of Iowa
Jack Eugene Casey, Virginia
B.S. 1957, University of Illinois
Donald Lawrence Clark, Maryland
B.S. 1964, North Carolina State
University at Raleigh
James Leonard Duda, Maryland
B.S. in M.E. 1963, Pennsylvania State
University
Michael Jay Feil, Maryland
B.S. in E.E. 1964, Polytechnic Institute
of Brooklyn
Sol Joseph Gems, Virginia
B.E.E. 1962, City College, New York
Roger Joseph Haddad, France
E.E. Diploma 1966, University of Paris,
France
Robert Bryan Hamm, Virginia
B.S. in Engr. 1966, George Washington
University
James Walter Johnson, Jr., District of
Columbia
B.S. 1963, Howard University
Stephen Warren Klare, Virginia
B.S. (E.E.) 1968, George Washington
University
Roger Glenn Klungte, Virginia
B.S.E. 1965, University of Michigan
Milton Daniel Kowalewski, Jr., Maryland
B.S. 1963, Loyola College
Russell Nyce Kulp, Sr., Maryland
B.M.E. 1950, George Washington
University
Gerald Michael McDonald, Maryland
B.E.E. 1957, Rensselaer Polytechnic
Institute

Joseph William Miller, Jr., Maryland
B.E.E. 1964, University of Florida
Edward Ray Murray, District of
Columbia
B.S. (M.E.) 1967, George Washington
University
Walter Oechslein, Maryland
B.S. in M.E. 1964, University of
Wisconsin
Abraham S. Pollack, Maryland
B.S. 1947, City College, New York
Thomas Leo Robertson, Jr., Maryland
B.C.S. 1943, Southeastern University
B.E.E. 1963, George Washington
University
Rodolfo Ramiro Rodriguez, Maryland
B.S. in E.E. 1963, University of Miami
Walter Charles Roehr, Maryland
B.E.E. 1961, City College, New York
Stephen Roman, Maryland
B.S. in E.E. 1966, Hofstra University
Lawrence Arthur Sames, Maryland
B.S. 1966, Pennsylvania State
University
Alfred Lester Seivold, Maryland
B.E.S. 1959, Johns Hopkins University
Sethu Sekhar, India
B.S. (M.E.) 1967, George Washington
University
Jennings Thomas Smith, Maryland
B.S. in E.E. 1963, Utah State
University of Agriculture and
Applied Science
William Dean Smith, Maryland
B.S. 1964, Purdue University
Patrick John Steen, Maryland
B.E.E. 1964, City College, New York
Frissell Clifton Walker, Virginia
B.S. 1964, Hampton Institute
James Harley Worthen, Virginia
B.E.E. 1959, Ohio State University

MASTER OF SCIENCE IN ENGINEERING

Faith Rawdon-Smith Neel, District of
Columbia
B.E.E. 1963, George Washington
University

DOCTOR OF SCIENCE

Steven Edward Bollt, Maryland

Operations Research

Dissertation: *A Guerrilla Economics and Logistics Model*

B.S., M.S. 1964, Massachusetts Institute of Technology

Michael Chi, Virginia

Theoretical and Applied Mechanics

Dissertation: *Eigenvalue Problem Involving a Domain of Arbitrary Shape*

B.S. in C.E. 1946, University of Tientsin, China

M.S. 1949, Louisiana State University

Jimmie Joe Logan, Virginia

Computer Science

Dissertation: *Generalized Information System Modeling*

B.S. in E.E. 1952, M.S. in E.E. 1954, Southern Methodist University

Ashton James Parris, District of Columbia

Medical Engineering

Dissertation: *A Cybernetic Translator System for the Physically Handicapped*

B.S. in E.E. 1961, M.S. 1965, Howard University

Dillon Foster Scofield, Ohio

Theoretical and Applied Mechanics

Dissertation: *Self-consistent Many-OPW Cohesive Energy, Lattice Constant, and Compressibility of Aluminum*

B.S. (Engr.Sc.) 1965, M.S. 1966, George Washington University

SCHOOL OF EDUCATION

Student Marshal: Priscilla Ann Studholme

BACHELOR OF ARTS IN EDUCATION

Karen Abrams, Rhode Island

English

Linda Ann Bartlett, District of Columbia

English

Donna Lynn Belkin, New Jersey

Elementary Education

Janet Linda Berens, New York

Elementary Education

Juliette Barbara Brown, Connecticut

English

Jacqueline Enid Burris, New York

Elementary Education

Mary Ellen Cronin, New Jersey

English

Maxine Davidowitz, New Jersey

Art

Claudia Dintenfass, New York

Speech and Drama

Deborah Dahl Dodge, Virginia

Elementary Education

(With Distinction)

Gail Roberta Domin, New York

Elementary Education

Ann Dorenter, New Jersey

Social Studies

Carol Beth Ducas, New York

Social Studies

Dawn Brill Duques, Virginia

Elementary Education

Susan Joan Franklin, New York

Elementary Education

Ronnee Susan Fried, New York

Elementary Education

Linda Muriel Galer, Massachusetts

English

Tillie Carol Garfinkel, Maryland

Elementary Education

- Katherine Ellen Gartland, District of Columbia
Elementary Education
(With Distinction)
- Sandra Jean Gillmore, Maryland
English
- Pamela Renée Gindin, New Jersey
English
- Barbara Gail Ginsberg, Maryland
History
- Susan Goldstein, District of Columbia
Elementary Education
- Marjorie Nan Gorodko, New Jersey
History
- Bonnie Marcia Green, Maryland
Elementary Education
(With Distinction)
- Ellen Anne Green, Pennsylvania
English
- Adrienne Frances Gruber, Maryland
French
- Karen Ann Gruber, New Jersey
Elementary Education
- Louise Gaye Heller, New York
Elementary Education
- Susan Hendlin, New Jersey
Elementary Education
- Susan Belle Hurwitz, District of Columbia
Elementary Education
- Eugene Tuttle Klein, Virginia
Mathematics
- Lora Sue Krafchik, New Jersey
Elementary Education
- Marilyn Kron, New Jersey
Elementary Education
- Laurie Carol Lasker, New Jersey
Social Studies
- Katherine Louise Laub, Delaware
Social Studies
- Ellen Faith Limmer, New York
Elementary Education
- April Ann Luca, New York
History
- Pamela Ann Maida, New Jersey
Elementary Education
- Marcia Nancy Mandl, Virginia
Elementary Education
- Marcella Ann Massie, Virginia
English
- Elizabeth Ann McCarthy, New Jersey
Elementary Education
- Maryanne Mosorjak, Pennsylvania
Art
- Mary Louise Moxness, Pennsylvania
Elementary Education
- Barbara Evelyn Mulliken, Virginia
Elementary Education
- Diana Edith Munk, District of Columbia
Dance
- Sharon Jacqueline Nussbaum, New Jersey
French
- Josephine Drinkwine Pida, Virginia
Elementary Education
(With Distinction)
- Lauren Mary Reed, New Jersey
Elementary Education
- Elizabeth Anne Rice, New Hampshire
Elementary Education
- Ruth Ann Rice, Maryland
Spanish (With Distinction)
- Patti Cargill Richards, Virginia
Elementary Education
- Laura Ann Ries, Pennsylvania
Elementary Education
- Susan Priscilla Robinette, District of Columbia
Elementary Education
- Lillian Herron Rohrer, District of Columbia
French
- Ann Linda Rose, New York
Social Studies
- Isabel Elise Rose, Pennsylvania
English
- Joan Ellen Rosenstock, New York
Elementary Education
- Mara Beth Ross, District of Columbia
Elementary Education
- Jane Rae Rostov, Virginia
English
- Sally Anne Samaras, Maryland
Elementary Education
- Phyllis Lee Schiller, New York
Elementary Education
- Judith Margaret Schmidt, Maryland
Elementary Education
- Susan Hope Schraub, New York
Elementary Education
- Sandra Lynn Schreiber, District of Columbia
Elementary Education
- Martha Sue Schulman, New Jersey
Elementary Education
- Susan Beth Schwartz, Maryland
Elementary Education
- Glen Ray Simmons, District of Columbia
Mathematics
- Patricia Anne Snead, Virginia
Elementary Education
- Gene Martha Solomon, New Jersey
Social Studies

Linda Marion Strauss, Connecticut
French

Priscilla Ann Studholme, Virginia
English (With Distinction)

Frances Ann Stutz, District of Columbia
Elementary Education

Karen Faye Tankel, New Jersey
Elementary Education

Joan Ellen Tinley, Virginia
Elementary Education

Greta Jeanette Townsend, Maryland
Business Education

Sharyn Elaine Walman, Virginia
Elementary Education

Carole Beth Wasserstein, New York
Elementary Education

Leslie Joan Weiskopf, Virginia
Elementary Education

Ellen Weitz, New York
Elementary Education

Bryn Lois Wolinitz, New York
Elementary Education

Judith Susan Zemsky, New York
Social Studies

Beverly Elaine Zigman, Virginia
Elementary Education

Carol Laurie Zimmer, District of
Columbia
Elementary Education

BACHELOR OF SCIENCE IN PHYSICAL EDUCATION

Susan Lee Braun, Missouri
Charles Richard Campbell, District of
Columbia

Edwin Howard Herrick, Jr., Ohio

Maureen Else Lang, New Jersey
Gary Walter Miller, Virginia
Bernard Lee Swain, Virginia

MASTER OF ARTS IN EDUCATION

Daryl Manley Allman, Virginia
Higher Education

B.S. 1958, Oregon State University

Leslie Ann Backus, New York
Reading

B.S. in Ed. 1966, Wheelock College

Anne Gibson Bair, Maryland
Rehabilitation Counseling

B.A. 1967, College of William and
Mary

Constance Wilkins Bataller, Virginia
Curriculum

B.A. in Ed. 1964, University of Florida

Susan Snow Behlmar, Maryland
Special Education

B.A. 1965, California State College at
Los Angeles

Franklin James Beto, Virginia
Physical Education

B.A. 1958, Salem College, W.Va.

Berta Felisa Biritos, Virginia
Student Personnel Work in Higher
Education

B.S. 1960, Madison College

Virginia Lowe Borella, New York
Special Education

B.S. 1966, State University of New
York, College at Oneonta

Claudia Smith Boswell, Virginia
Early Childhood Education

B.A. in Ed. 1955, George Washington
University

Daphne Dion Bretz, Virginia
Guidance

B.A. 1958, Sacramento State College

Leonard Harry Brody, Maryland
Adult Education

B.A. 1961, George Washington
University

Susan Lederman Brown, Maryland
Guidance

B.A. 1965, New York University

David Benjamin Budd, Virginia
Special Education

B.S. 1958, District of Columbia
Teachers College

David Vernon Burket, Maryland
Special Education

B.A. 1965, Lycoming College

Celeste Wilson Burton, District of
Columbia

Reading

B.S. 1953, District of Columbia
Teachers College

Gloria Sebastian Butland, District of
Columbia

Adult Education

B.A. in Ed. 1962, George Washington
University

Holt Fairfield Butt IV, District of
Columbia

Special Education

B.A. 1957, University of the South

- James Aelford Cabbagestalk, District of
Columbia
Guidance
B.A. 1952, South Carolina State College
- Michael Angelo Cavanaugh, Texas
Guidance
B.A. 1934, Loras College
- David Cole Chalfant, Virginia
Secondary Administration
B.A. 1963, Roanoke College
- Kenneth Maynard Chapman, Virginia
Adult Education
B.S. in Ch.E. 1961, Massachusetts
Institute of Technology
- Francis Joseph Chiasson, District of
Columbia
Adult Education
B.A. 1955, Assumption College, Mass.
- Phyllis Kuhl Chittenden, Maryland
Elementary Education
B.A. 1958, West Virginia Wesleyan
College
- Gladys Marie Clark, District of
Columbia
Special Education
B.A. 1957, Howard University
- Herman Cobb, Jr., District of Columbia
Elementary Administration
B.S. in Ed. 1955, Winston-Salem State
College
- Theodore Paul Colna, Virginia
Physical Education
B.S. in P.E. 1959, George Washington
University
- Elizabeth Wells Conrad, District of
Columbia
Rehabilitation Counseling
B.A. 1946, George Washington
University
- Dorothy Woodward Cresswell, Maryland
Rehabilitation Counseling
B.A. in Ed. 1944, University of
Mississippi
- Carolyn Joyce Croom, Virginia
Guidance
B.S. 1955, East Carolina University
- Lester Bryant Croom, Virginia
Secondary Education
B.S. 1955, East Carolina University
- William Bedford Dalton, District of
Columbia
Elementary Administration
B.S. 1955, Morgan State College
- Leslie Young Davis, District of Columbia
Special Education
B.S. 1955, District of Columbia
Teachers College
- Marjorie LaVerne Davis, District of
Columbia
Special Education
B.S. 1961, District of Columbia
Teachers College
- Mildred Maxine Davis, Maryland
Special Education
B.A. 1949, Howard University
- Mina Brown Dulcan, District of Columbia
Rehabilitation Counseling
B.A. 1943, George Washington
University
- Julie Alderson Durkin, Maryland
Special Education
B.A. in Ed. 1966, George Washington
University
- Charles Philip Dusterhoff, Maryland
Secondary Education
B.A. in Ed. 1965, George Washington
University
- Jerome Howard Edwards, Jr., District of
Columbia
Elementary Administration
B.S. 1954, District of Columbia
Teachers College
- LeRoy Edwards, District of Columbia
Special Education
B.S. 1959, District of Columbia
Teachers College
- Barbara Elaine Feldherr, New York
Human Growth and Development
B.S. 1968, Long Island University
- Eileen Winn Fenrich, New Jersey
Student Personnel Work in Higher
Education
B.A. 1964, Bowling Green State
University
- Barbara Sharon Feuer, New York
Special Education
B.A. 1967, Hunter College
- Wendy Lynn Fields, New York
Special Education
B.A. 1968, George Washington
University
- Thomas Geary Fisher, Maryland
Secondary Education
B.A. 1959, University of Maryland
- Joan McDougall Flood, Virginia
Elementary Education
B.A. 1958, Scripps College
- Elizabeth Wollaston Forbes, Virginia
Human Growth and Development
B.S. 1968, Madison College

- Nancy Meade Ford, Virginia
Guidance
B.S. in Ed. 1951, University of Nebraska
- Greta Pearl Forsman, Virginia
Secondary Education
B.A. in Ed. 1963, George Washington University
- Katherine Louise Foti, Maryland
Secondary Education
B.S. in Ed. 1955, Concord College
- Marinda Hall Gaskins, District of Columbia
Special Education
B.S. 1952, District of Columbia Teachers College
- John Joseph Gearrity, District of Columbia
Elementary Education
B.S. 1966, District of Columbia Teachers College
- Yolanda Valencia Glower, District of Columbia
Special Education
B.S. 1968, District of Columbia Teachers College
- Jean Victoria Goldenberg, District of Columbia
Special Education
B.S. in Ed. 1967, University of Nebraska
- Nathalie Ann Goldensohn, District of Columbia
Philosophy of Education
B.A. 1968, Brooklyn College
- Caroline Gage Gott, Virginia
Reading
B.S. 1966, Weber State College
- Robert Wallace Graham III, Virginia
Secondary Education
B.S. 1961, College of the Holy Cross
- Aline Bohm Greif, Maryland
Special Education
B.S. 1967, University of Pittsburgh
- Sarah Lance Griggs, Maryland
Special Education
B.A. 1944, Duke University
- Enid Gross, District of Columbia
Elementary Education
B.A. 1967, Hunter College
- Lynne Gayle Gross, District of Columbia
Special Education
B.A. 1968, Tufts University
- Albert Joseph Grover, Virginia
Physical Education
B.S. in Health Ed. 1955, Slippery Rock State College
- Erleen Hatch Hall, District of Columbia
Special Education
B.S. 1946, University of Minnesota
- Ann McBirney Hardwick, Virginia
Secondary Education
B.A. 1964, Westhampton College
- Beatrice Jo-Ann Harkleroad, Virginia
Special Education
B.S. in P.E. 1968, George Washington University
- John Kenneth Hart, Virginia
Employee Development
B.A. 1950, College of Wooster
- Mary Elizabeth Havard, Virginia
Physical Education
B.S. in Ed. 1943, Temple University
- Stanley Laverne Havens, Virginia
Secondary Education
B.S. in Ed. 1953, Lock Haven State College
- Thomas Michael Hawkins, Jr., Virginia
Secondary Administration
B.S. in P.E. 1964, George Washington University
- Patrick John Hennigan, Pennsylvania
Rehabilitation Counseling
B.A. 1967, Catholic University of America
- Patricia Ann Henry, Maryland
Special Education
B.A. 1963, Spelman College
- Judy Uhl Holcomb, Virginia
Guidance
B.S. in Nursing 1964, Ohio State University
- Marita Smith Holden, Virginia
Secondary Education
B.A. 1957, Roanoke College
- Sallie Maury Holzberg, Virginia
Physical Education
B.S. 1965, University of Maryland
- Charles Jay Humphries, Virginia
Physical Education
B.S. in P.E. 1968, George Washington University
- Jean Johnson Jackson, District of Columbia
Elementary Administration
B.S. 1957, District of Columbia Teachers College

- Sandra Augusta Jacobs, District of Columbia
Secondary Administration
B.A. in Ed. 1966, George Washington University
- Barbara Hermling Johnson, Maryland
Secondary Education
B.A. 1963, University of Illinois
- Geraldine Leiko Kawakami, Hawaii
Special Education
Ed.B. 1967, University of Hawaii
- John Franklin Kegley, District of Columbia
Guidance
B.A. 1966, Gettysburg College
- James Brooke Kessler, Maryland
Physical Education
B.S. 1962, University of Maryland
- Frederick Leonard King, Maryland
Guidance
B.S. in Ed. 1961, Central State College, Ohio
- Marjorie Ann Knutson, Virginia
Physical Education
B.A. 1957, Luther College
- Eric Kocher, District of Columbia
Student Personnel Work in Higher Education
B.A. 1932, Princeton University
M.B.A. 1934, Harvard University
- Joyce Lee Kramer, New York
Special Education
B.A. 1968, American University
- Judi Robenia Lewis, Pennsylvania
Elementary Administration
B.S. in Ed. 1963, Cheyney State College
- Nellie Ruth Lewis, District of Columbia
Reading
B.A. 1961, Howard University
- Calvin Branch Lightfoot, Maryland
Elementary Administration
B.S. 1951, Hampton Institute
B.S. 1957, Bowie State College
- John Calvin Lloyd, Maryland
Elementary Administration
B.S. in Ed. 1950, Shippensburg State College
- Joseph Loewe, Jr., Maryland
Secondary Administration
B.S. 1958, District of Columbia Teachers College
- Mildred Cecelia Love, Maryland
Special Education
B.S. in Phar. 1949, Howard University
- Raymond Stuart Lowry, Maryland
Employee Development
B.A. 1951, University of Southern California
- Alice Davison Luckey, District of Columbia
Elementary Administration
B.A. in Ed. 1953, West Virginia State College
- Charles Estep Martin, Virginia
Physical Education
B.S. in P.E. 1962, West Virginia University
- Greta Juanita Maturo, Virginia
Special Education
B.S. in Com. 1957, University of Kentucky
- Juanita Levan Mayer, District of Columbia
Adult Education
B.A. 1961, American University
- Robert Earl Meyer, Virginia
Secondary Education
B.A. 1966, George Washington University
- Sharon Lee Michael, District of Columbia
Special Education
B.A. 1968, University of Rochester
- Eula Mallette Miller, Virginia
Special Education
B.A. 1953, Bennett College, N.C.
- Laurel Eris Miller, Virginia
Reading
B.S. 1962, Butler University
- Cynthia Martha Moutsinas, New York
Philosophy of Education
B.A. 1967, Queens College, N.Y.
- Jean Elizabeth Mowry, District of Columbia
Special Education
B.S. 1966, Florida Atlantic University
- Francis Joseph Murphy, Pennsylvania
Guidance
B.S. 1966, University of Scranton
- Robert Murray Nugent, Virginia
Physical Education
B.S. in P.E. 1967, George Washington University
- Carleen Marie Payne, Maryland
Reading
B.S. 1963, Boston College
- Dene Adele Taylor Pendleton, Maryland
Elementary Administration
B.Mus.Ed. 1958, Howard University

- Margaret Josephine Phillips, Ohio
Special Education
B.S. 1965, Bowling Green State University
- Barbara Lynn Plott, Virginia
Special Education
B.S. in H.E. 1963, University of Delaware
- Frances Miller Plummer, District of Columbia
Elementary Education
B.S. 1961, District of Columbia Teachers College
- Robert Dean Powell, Maryland
Elementary Administration
B.S. 1960, Salisbury State College
- Barbara Wood Reamer, Virginia
Elementary Education
B.S. 1939, Indiana University of Pennsylvania
- Jeffrey William Richards, Maryland
Special Education
B.A. 1965, University of Scranton
- Mary Blair Saunders, Virginia
Curriculum
B.A. 1945, University of Arkansas
- Herman Adolph Schiemer, Jr., Maryland
Elementary Administration
B.A. 1965, Indiana University of Pennsylvania
- Laura Jeanne Schultz, Virginia
Special Education
B.S. 1968, St. Joseph College, Md.
- Martha Jane Schurman, New York
Guidance
B.S. in Ed. 1964, Bucknell University
- William Randolph Scott, Virginia
Physical Education
B.A. 1957, Marshall University
- Portia Coleman Shields, Maryland
Reading
B.S. 1960, District of Columbia Teachers College
- Susan Gail Singer, Maryland
Elementary Education
B.A. 1967, Southampton College of Long Island University
- Alvin Eugene Smith, District of Columbia
Elementary Administration
B.S. 1959, District of Columbia Teachers College
- Myra Powell Spriggs, District of Columbia
Elementary Administration
B.S. 1955, District of Columbia Teachers College
- Edith Brown Sterrett, Virginia
Rehabilitation Counseling
B.A. 1943, Radcliffe College
- Linda Adele Swide, Maryland
Special Education
B.S. in Ed. 1968, State College at Fitchburg
- Virginia Lee Tegtmeier, District of Columbia
Guidance
B.A. 1963, George Washington University
- Helen Wood Turner, District of Columbia
Special Education
B.S. 1955, Bowie State College
- Gloria Joan Tyler, District of Columbia
Guidance
B.S. in Ed. 1964, Winston-Salem State College
M.A. in Ed. 1967, George Washington University
- Joan Nancy Vorobey, Virginia
Special Education
B.A. 1949, George Washington University
- Charles Leroy Wade, Jr., Maryland
Physical Education
B.S. 1965, Murray State University
- Jeannette McDaniel Washington, District of Columbia
Elementary Administration
B.S. 1954, District of Columbia Teachers College
- Margaret Loomis Weaver, Maryland
Secondary Education
B.A. 1944, Radcliffe College
- Hensley Williams, Tennessee
Secondary Education
B.S. 1941, U.S. Naval Academy
- June Mignogna Winter, Virginia
Secondary Education
B.A. 1957, Vassar College
- Ellis Bowman Wisler, Jr., Virginia
Physical Education
B.S. in P.E. 1961, George Washington University
- Robert Hall Young, Maryland
Guidance
B.S. 1952, Slippery Rock State College

MASTER OF ARTS IN TEACHING

- Helen Kathryn Applegate, Virginia
Elementary Education
B.A. 1958, Smith College
- Jean Blaney Bahr, Virginia
Elementary Education
B.A. 1955, Pennsylvania State University
- Sandra Anne Benedetti, New York
Elementary Education
B.A. 1968, College of Mount St. Vincent
- Elka Razel Booth, District of Columbia
Elementary Education
B.A. 1961, University of Texas at Austin
- Mary Carolyn Boswell, Virginia
Elementary Education
B.A. 1967, George Washington University
- Ann Tzonetakos Chicklis, Maryland
Elementary Education
B.S. in Ed. 1947, State College at Salem
- Rosemary Kathryn Conley, District of Columbia
Elementary Education
B.A. 1965, University of Missouri
- Marguerite Bozarth Davis, Virginia
Elementary Education
B.A. 1953, College of William and Mary
- Roberta Carter Dawson, New Jersey
Elementary Education
B.A. 1968, Rutgers, the State University
- RoseMarie Lucy DiGregorio, New York
Elementary Education
B.A. 1968, College of Mount St. Vincent
- Ann Wright Dinwiddie, Massachusetts
Elementary Education
B.A. 1967, Skidmore College
- Mary Carol Dzurko, Pennsylvania
Elementary Education
B.A. 1968, University of Pittsburgh
- Claire Goldner, Maryland
Elementary Education
B.A. 1947, Hunter College
- Charlotte Reed Hall, Maryland
Elementary Education
B.A. 1955, Hood College
- Helga Monica Havelka, Virginia
Elementary Education
B.A. 1967, George Washington University
- Paula Jean Johrde, Maryland
Elementary Education
B.F.A. 1968, Ithaca College
- Mary Melanie Joseph, Maryland
Elementary Education
B.A. 1968, College of Mount St. Vincent
- Brenda Jane Lee, Pennsylvania
Elementary Education
B.A. 1968, Western College for Women
- Rosemarie Therese Litterio, Virginia
Elementary Education
B.A. 1968, Chestnut Hill College
- Ronnild Anne MacDonald, District of Columbia
Elementary Education
B.A. 1968, George Washington University
- Tobie Gail Meisel, Virginia
Elementary Education
B.A. 1966, Miami University
- Keith Lee Miller, District of Columbia
Elementary Education
B.A. 1968, George Washington University
- Elizabeth Lehmann Nissen, Virginia
Elementary Education
B.A. 1967, MacMurray College
- Karen Prudence Prah, Indiana
Elementary Education
B.A. 1968, Western College for Women
- Alice Jeung Shih, Maryland
Elementary Education
B.A. 1968, Bowie State College
- Barbara Ann Smith, Rhode Island
Elementary Education
B.S. 1953, University of Rhode Island
- Janet Ann Spadola, New York
Elementary Education
B.A. 1968, LeMoyne College
- Jency Evelyn Taliaferro, Virginia
Elementary Education
B.B.A. 1952, Southern Methodist University
- Marilynne Nora Williams, Maryland
Elementary Education
B.A. 1967, University of Maryland

EDUCATION SPECIALIST

- Juanita Wormley Braddock, District of Columbia
Special Education
B.S. 1956, District of Columbia Teachers College
M.A. in Ed. 1960, George Washington University
- Lucy Mae Conwell, District of Columbia
Elementary Administration
B.S. in Ed. 1957, Elizabeth City State College
M.A. in Ed. 1966, George Washington University
- James Jimmy Cunningham, District of Columbia
Guidance
B.S. in Ed. 1964, Virginia State College
M.A. in Ed. 1967, George Washington University
- Donald Frank Hall, Maryland
Special Education
B.A. 1953, University of New Mexico
M.A. in Ed. 1967, George Washington University
- Betty Rigsby Howard, District of Columbia
Special Education
B.A. in Ed. 1966, M.A. in Ed. 1967, George Washington University
- Joseph Anthony Monte, Maryland
Secondary Administration
B.S. 1960, St. Joseph's College, Pa.
M.A. in Ed. 1965, George Washington University

DOCTOR OF EDUCATION

- John Leo Beamer, Maryland
Elementary Administration
Dissertation: *The Relationship of Administrative Leadership Practices to Teacher Morale in the Public Elementary Schools of Charles County, Maryland*
B.S. in Ed. 1954, Ed.M. 1960, Kent State University
- Clarence Napoleon Blake, Maryland
Adult Education
Dissertation: *A Descriptive Analysis of the Adult Education Methodology and the Nonthreatening Approach to Adult Education as Practiced by the Institute of Lifetime Learning, Washington, D.C.*
B.S. 1952, Wayne State University
M.A. 1960, Gonzaga University
- Jackson Hayden Dellastatious, Maryland
Administration and Supervision
Dissertation: *A Study of Practices and Procedures Used in the Recruitment and Selection of Teachers for the Public Schools in the State of Maryland*
B.S. 1961, Pennsylvania State University
Ed.M. 1963, American University
- Elizabeth Mason Finlayson, New York
Guidance and Counseling
Dissertation: *The Wife of the Army Officer: Her Academic and Career Preparation and Her Current Employment and Volunteer Services*
B.S. 1941, M.S. 1943, University of Wisconsin
- Charles Francis Forst, Maryland
Curriculum
Dissertation: *A Survey of the Status of Middle Schools in the County Systems of the State of Maryland as Related to Junior High Schools within the State*
B.S. in Ed. 1950, Shippensburg State College
M.A. in Ed. 1957, George Washington University

Ann Christina Gross, Maryland

Curriculum

Dissertation: *A Study of the Relationships of High School Courses of Studies to the Occupational and Educational Choices of the June, 1968, High School Graduates of Prince Georges County, Maryland*

B.S. 1955, University of Maryland

M.A. in Ed. 1967, George Washington University

Marilyn Vickman Lichtman, District of Columbia

Research and Evaluation

Dissertation: *Intelligence, Creativity, and Language: An Examination of the Interrelationships of Three Variables among Preschool, Disadvantaged Negro Children*

B.A. in Ed. 1959, M.A. in Ed. 1962, George Washington University

Walter Edward Lowe, Sr., Virginia

Administration and Supervision

Dissertation: *A Study of the Relationship between the Socioeconomic Status and the Reading Performance of Negro Students Enrolled in the Public Schools of Caroline County, Virginia*

B.S. 1939, Virginia State College

M.A. in Ed. 1967, George Washington University

John Joseph McNelis, Maryland

Administration and Supervision

Dissertation: *An Investigation of the Functions, Role, and Characteristics of Department Chairmen in Selected School Systems throughout the United States as Perceived by Secondary School Principals*

B.S. 1951, University of Scranton

M.A. in Ed. 1961, George Washington University

Edward Peter Oliver, Virginia

Philosophy of Education

Dissertation: *Philosophic Confrontations*

B.S. 1955, M.A. in Ed. 1963, East Carolina University

Edwin Fusaichi Sasaki, Maryland

Philosophy of Education

Dissertation: *The Existential Attitude: A Factor in College Student Activism*

B.A. in Med.S. 1960, M.A. in Ed. 1963, University of Michigan

Virginia Harward Teller, District of Columbia

Elementary Administration

Dissertation: *An Investigation of Parents' Opinions, Attitudes, and Knowledge of Selected Aspects of the Public Schools of Prince William County, Virginia*

B.S. 1950, District of Columbia Teachers College

M.A. in Ed. 1963, George Washington University

Michael Clinton Wilson, Maryland

Curriculum

Dissertation: *Graphic Arts Education in the Public Secondary Schools of Maryland*

B.S. 1964, Ed.M. 1967, University of Maryland

George Thomas Yungman, Virginia

Guidance and Counseling

Dissertation: *An Experimental Comparison of Equivalent Pictorial-auditory, Auditory, and Written Modes of Disseminating Occupational Information among Inner-city and Suburban Negro Adolescents*

B.A. in Ed. 1963, Madison College

Ed. M. 1966, College of William and Mary

SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION

Student Marshal: Charles Marshall Scott

BACHELOR OF BUSINESS ADMINISTRATION

| | |
|---|--|
| Ibrahim Mohammad Al-Yousif, District of Columbia Business Administration | Robert Samuel Hirsh, District of Columbia International Business |
| Barry Steven Berg, Maryland Accounting | Elmer Cornelius Holt, Jr., Virginia Business Administration (With Distinction) |
| George Michael Bloom, Massachusetts Business Administration | Frank William Karas, Maryland Business Administration |
| Cary Allan Blum, Illinois Business Administration | Norma Margaret Katelvero, New Jersey Business Administration |
| Penelope Stockton Bonsall, District of Columbia Business Administration | Irvin Klavan, Virginia Business Administration |
| Robert Atkins Bowman, Virginia Business Administration | Barton Harry Kogan, New York Business Administration |
| Jeffrey Eliot Brenner, District of Columbia Business Administration | George Howard Lee, Florida Business Administration |
| Jeffrey Ira Breslaw, Florida Accounting | Ann Marie Lennahan, Virginia Accounting |
| Jonathan John Broome, Jr., Virginia Business Administration | William Joseph Maloney, Virginia Business Administration |
| Robert James Castro, District of Columbia International Business | John Milton McDaniel, Maryland Business Administration |
| Henry Fiman Cohan, Maryland Business Administration | Gerald Minkin, New Jersey Accounting |
| Ralph Larry Corbell, Illinois Business Administration | Roy Lee Moss, Virginia Business Administration |
| Richard John Crosfield, England International Business | Robert Alan Nager, New York Business Administration |
| Laurence Edwin Den, Maryland Business Administration | Waldorf Adolphus Nelson, Maryland Business Administration |
| Maristev Doyle, Virginia Business Administration | William Francis Nugent, Virginia Accounting |
| Chester Raymond Felkner, Pennsylvania Business Administration | Brian Green O'Neill, California Business Administration |
| David Melo Ferreira, Maryland Accounting | Ronald Winfrey Peddicord, Maryland Business Administration |
| Kenneth Robert Ferris, Maryland Accounting | Philip Wayne Pennington, Virginia Business Administration |
| Charles Roland Gartrell, Maryland Business Administration | Carollyn Marii Philip, District of Columbia Business Administration |
| John Martin Golden, Virginia Business Administration | Daniel Jeffrey Ratner, New York Accounting |
| William Moran Golden, Pennsylvania Business Administration | Paul Edward Relkin, New Jersey Business Administration |
| Richard Alan Goodman, New Hampshire Business Administration | Arthur Ivan Rettinger, New York Accounting |
| John Linton Green, District of Columbia International Business | Julian Gene Rich, Maryland Business Administration |
| John Edward Hartman, Virginia Business Administration | Ronald Charles Roos, Virginia International Business |
| Robert Stuart Hertzog, New Jersey Accounting | Robert Delnar Royer, Jr., Virginia Business Administration |

Richard Arthur Satlow, New York
Accounting
Ned Steven Scherer, New York
Accounting
Donald Joseph Schickler, Texas
Business Administration
Martin Charles Schwartz, District of
Columbia
Accounting
Charles Marshall Scott, Maryland
Business Administration
(With Distinction)
Wayne Alvin Sharon, Virginia
Accounting
Michael Rocco Stellabotte, Virginia
Business Administration

Karen Benson Stephens, Virginia
Business Administration
James Crawford Tilley, Connecticut
Business Administration
Thomas Sheldon Tubbs, Maryland
Business Administration
Elena Vigilante, Pennsylvania
Business Administration
Robert Peter Wason, Maryland
International Business
Joel Alan Wasserstein, New York
Business Administration
Michael Patrick White, Virginia
Business Administration
Jon Lewis Zimmerman, New York
Business Administration

BACHELOR OF SCIENCE IN GENERAL STUDIES

Donald Edward Boldt, Virginia
Business Administration
William Harry Bovis, Virginia
Business Administration
Howard Thornton Chastain, Texas
Business Administration
Margaret Kathleen Clardy, District
of Columbia
Business Administration
Francis Simon Connors, New York
Business Administration
James Travis Dalton, Maryland
Business Administration
Ephraim Everett Fowler, Jr., Virginia
Business Administration
Robert Sheridan Galbreath, Connecticut
Business Administration
Franklin Delano Gillespie, New Jersey
Business Administration
William Marshall Gortney, Virginia
Business Administration
Hugh Alexander Hoy, Virginia
Business Administration
Lloyd George Hudson, Virginia
Business Administration
Larry Wayne Johnson, Kansas
Business Administration
Ira Kenneth Kruger, Virginia
Business Administration
Thomas Walter MacConnell II, Maryland
Business Administration

James Lonelle Mashburn, Virginia
Business Administration
Francis Joseph Murphy, Virginia
Business Administration
Paul Albert O'Hop, Pennsylvania
Business Administration
Duane Ernest Potter, Washington
Business Administration
Harry Underwood Potter, Virginia
Business Administration
Paul Titus Ray, Maryland
Business Administration
Richard Dale Reynolds, Maryland
Business Administration
James Robert Ruppe, Virginia
Business Administration
George Peter Sotos, Virginia
Business Administration
Richard Benjamin Taylor, Virginia
Business Administration
Robert Emerson Taylor, Virginia
Business Administration
Stanley Vordale Titterud, California
Business Administration
Robert Joseph Wells, Virginia
Business Administration
Richard Lee Wentworth, Maryland
Business Administration
Gary Wilder, Ohio
Business Administration

MASTER OF ART IN GOVERNMENT

Sally Marie Grooms, District of
Columbia
Public Administration
B.A. 1966, DePauw University

Raymond Clarence Jacobs, Virginia
Public Administration
B.A. 1964, Louisiana State University

Bessie Rita Koubele, District of
Columbia
Personnel Administration
B.A. 1964, George Washington
University

Harry Carl Taylor, Indiana
Public Administration
B.A. 1967, West Virginia University

Ann Elisabeth Webster, Maryland
Personnel Administration
B.A. 1950, Smith College
Barry Judson White, Maryland
Public Administration
B.A. 1957, University of California,
Los Angeles

MASTER OF BUSINESS ADMINISTRATION

John Joseph Adair, Virginia
Accounting
B.S. in B.A. 1963, Duquesne
University

Michael J. Alexander, Pennsylvania
Health Care Administration
B.A. 1966, Union College, Ky.

Samuel Beverly Allen, Virginia
Business Administration
B.S. 1951, University of Colorado

Robert Craig Armstrong, Pennsylvania
Health Care Administration
B.A. 1964, Pennsylvania State
University

Harry Hodges Arnold, Virginia
Business Administration
B.A. 1954, University of North
Carolina at Chapel Hill

Robert Ely Baer, Jr., West Virginia
Health Care Administration
B.A. 1960, West Virginia University

Howard Glenn Balogh, Virginia
Business Administration
B.S. 1952, Youngstown University

John Robert Bender, New York
Business Administration
B.A. 1965, Fairfield University

George Barry Bernstein, Maryland
Business Administration
B.A. 1961, Pennsylvania State
University

Dennis Clair Biddinger, Ohio
Business Administration
B.S. in B.A. 1962, Bowling Green
State University

George Benedict Bower, Virginia
Accounting
B.S. 1956, King's College, Pa.

Robert Lawrence Brandt, New York
Health Care Administration
B.A. 1967, Carthage College

George Hendrick Brown, Virginia
Business Administration
B.S. 1953, Lafayette College

Harlan James Brown, Virginia
Business Administration
Met.Engr. 1957, Colorado School of
Mines

James Wilbur Brown, Virginia
Business Administration
B.S. 1957, Ball State University

James Einar Jensen Brunsgaard, Jr.,
Maryland
Health Care Administration
B.S. 1953, Pennsylvania State
University

John Joseph Buckley, Jr., Illinois
Health Care Administration
B.A. 1966, Kenyon College

David Lehmann Burka, District of
Columbia
Accounting

B.S. 1963, Miami University
Marion Gordon Busby, Virginia
Business Administration
B.B.A. 1957, University of Michigan

John Henry Cain, Massachusetts
Business Administration
B.S. 1965, Long Island University

John Thomas Carlisle, Florida
Health Care Administration
B.A. 1959, David Lipscomb College

Bryan Lester Clark, Jr., Virginia
Business Administration
B.S. 1954, Virginia Commonwealth
University

Donna Devine Collins, Virginia
Business Administration
B.A. 1962, Trinity College, D.C.

John Sanderson Cramer, Pennsylvania
Health Care Administration
B.B.A. 1964, Adelphi University

Lee Duane Crane, Virginia
Business Administration
B.A. 1958, St. Cloud State College

Ralph Edgar Cross, Florida
Health Care Administration
B.S. 1966, Florida State University

- James Dethlef Dethlefsen, New Jersey
Business Administration
B.A. 1959, Gettysburg College
- John Walter Dierks, Virginia
Business Administration
B.A. 1954, Roanoke College
- Carl David Divelbiss, Virginia
Business Administration
B.A. 1957, Central Washington State College
- Ruby Mae DuBois, Missouri
Health Care Administration
B.S. 1966, Indiana University
- Robert Watson Elliott, New York
International Business
B.B.A. 1966, University of Toledo
- Bernon Reneld Erickson, Maryland
Business Administration
B.A. 1964, Chapman College
- Martha Oleta Fisher, Georgia
Business Administration
B.S. in B.A. 1956, University of Georgia
- Patrick Edward Galbraith, Virginia
Business Administration
B.C.S. 1958, Seattle University
- Gerald Francis Gallagher, Pennsylvania
Business Administration
B. Gen. Ed. 1966, University of Nebraska at Omaha
- Martin Gans, New York
Health Care Administration
B.A. 1956, Hunter College
- James Joseph Gillice, Maryland
Business Administration
B.S. in B.A. 1959, Drexel Institute of Technology
- Stanley Alan Glassman, New York
Health Care Administration
B.S. 1966, New York University
- Jean-Pierre Claude Gouirand, France
International Business
Diplome Superieur d'Etudes 1967, Ecole Superieure de Commerce de Paris, France
- Steven Louis Griff, New Jersey
Health Care Administration
B.A. 1967, Queens College, N.Y.
- John William Grigsby, District of Columbia
International Business
B.S. 1963, Northwestern University
- James Wilbur Grodsky, Maryland
Business Administration
B.S. 1943, Georgia Institute of Technology
- Billy Don Gwartney, Oklahoma
Health Care Administration
B.S. 1967, Oklahoma Baptist University
- Martin Allen Hadelman, Connecticut
Health Care Administration
B.S. 1964, University of Connecticut
- William Scott Haight, New York
Business Administration
B.S. 1962, U.S. Coast Guard Academy
- John James Hampton, Florida
International Business
B.A. 1964, Stetson University
- Gerald Anthony Hawickhorst, Missouri
Business Administration
B.S. 1959, Parks College
- Harry Lynn Hazlett, Virginia
Business Administration
B.S. in Ind. Mgt. 1958, Georgia Institute of Technology
- Gerard Farrell Hewitt, Maryland
Health Care Administration
B.S. 1966, University of Maryland
- John William Holbrook, Virginia
Health Care Administration
B.S. in B.A. 1963, LaSalle College
- Byron M. Irwin, Pennsylvania
Health Care Administration
B.A. 1966, Drew University
- George Edgar Jones, Virginia
Business Administration
B.A. 1955, University of Mississippi
- Philip Clark Jones, District of Columbia
International Business
B.A. 1967, West Virginia University
- Arthur Sheldon Kaplan, New Jersey
Health Care Administration
B.A. 1966, Upsala College
- Marjorie Emeneau Karlsen, Virginia
Business Administration
B.A. 1964, Cardinal Cushing College
- Roy Glenn Kidwell, Maryland
Business Administration
B.S. 1960, University of Maryland
- Kevin Carey Kirwan, Virginia
Business Administration
B.A. 1959, Tufts University
- Leo Koehler, Jr., Texas
Business Administration
B.A. 1961, Midwestern University
- John Robert Kopicki, Pennsylvania
Health Care Administration
B.A. 1965, King's College, Pa.
- James Edward Lewis, Pennsylvania
International Business
B.B.A. 1968, George Washington University

- William Wayne Lohr, Virginia
International Business
B.S. 1962, Wayne State University
- Fred Joseph Lokay, Illinois
Business Administration
B.S. 1956, Lehigh University
- Donald Joseph McCarthy, Virginia
Business Administration
B.A. 1953, Carroll College, Mont.
- Robert Paul McDonald, Connecticut
International Business
B.A. 1966, Providence College
- John Luke McGuinness, Jr., Connecticut
Health Care Administration
B.B.A. 1966, University of Notre Dame
- Laurence Richard Medlin, Florida
Business Administration
B.S. 1963, U.S. Military Academy
- James Edward Meyer, Ohio
Business Administration
B.S. in Ind. Mgt. 1965, Georgia
Institute of Technology
- David Lee Morse, District of Columbia
Business Administration
B.S. in B.A. 1957, University of
Missouri
- William Stephens Muenster, Virginia
Business Administration
B.S. 1960, U.S. Naval Academy
- Horace Willard Murphy, Maryland
Health Care Administration
B.A. 1964, Atlantic Union College
- John Eugene Nolan, Virginia
Business Administration
B.S. 1957, U.S. Naval Academy
- Sister Mary Clare Nolan, Illinois
Health Care Administration
B.S. in Nursing 1963, St. Louis
University
- Donald Norman Nopper, Ohio
Business Administration
Ph.B. 1959, University of Detroit
- Arthur Bernard O'Connell, Connecticut
Business Administration
B.A. 1955, Trinity College, Conn.
- Sister Mary Kevin O'Malley, Maryland
Health Care Administration
B.S. 1965, St. Joseph's College, Ind.
- Donald Eugene Orleans, New Jersey
Health Care Administration
B.S. 1960, University of Colorado
- William Polson Page, Tennessee
Health Care Administration
B.S. 1944, U.S. Naval Academy
- Donald Edward Painter, Virginia
Business Administration
B.A. 1960, Ohio University
- Albert Peacock, Pennsylvania
Health Care Administration
B.A. 1964, George Washington
University
- Harold Bernard Peek, New Jersey
Business Administration
B.S. 1957, Bowling Green State
University
- Gary Randolph Pelphrey, Virginia
Business Administration
B.S. 1957, U.S. Naval Academy
- William Paul Penney, District of
Columbia
Business Administration
B.S. 1952, State University of New
York, Maritime College
- William Egbert Powell, Jr., Maryland
Business Administration
B.S. 1959, U.S. Naval Academy
- George Daniel Pozgar, Florida
Health Care Administration
B.A. 1966, Barrington College
- William John Prutting, District of
Columbia
Business Administration
B.S. in B.A. 1966, Georgetown
University
- William Alden Puckett, Illinois
Health Care Administration
B.S. 1966, Kansas State College of
Pittsburg
- Robert Paul Randall, California
Health Care Administration
B.A. 1961, San Francisco State College
- Henry Reichman, New York
Health Care Administration
B.B.A. 1966, Hofstra University
- Thomas Edward Ringwood, Jr., Virginia
Business Administration
B.S. 1949, U.S. Naval Academy
- John Frada Rothstein, New York
Health Care Administration
B.A. 1966, Alfred University
- Stephen Clifford Rupp, Virginia
Health Care Administration
B.S. in B.A. 1964, Marietta College
- Edward Worthington Samuel, Jr.,
Maryland
Business Administration
B.S. 1944, U.S. Military Academy
M.A. 1952, American University at
Beirut
- John Louis Schmidt, Jr., New York
Business Administration
B.S. 1962, U.S. Military Academy

- Wilson Joseph Schuerholz, South Carolina
Health Care Administration
B.S. 1952, University of Maryland
- Daniel Michael Sheridan, Montana
Business Administration
B.A. 1967, Seattle University
- Andrew Morris Sherling, Virginia
Business Administration
B.A. 1956, University of Maryland
- Robert George Shouldice, Pennsylvania
Health Care Administration
B.A. 1966, Lycoming College
- James William Henry Sigel, Maryland
Business Administration
B.B.A. 1966, George Washington University
- Charles Edward Smith, Virginia
Business Administration
B.A. 1963, Bates College
- James Wilbur Smith, District of Columbia
Business Administration
B.A. 1938, University of Houston
- Jan Forrest Smith, Maine
Business Administration
B.S. 1963, U.S. Coast Guard Academy
- Cwi Steiman, District of Columbia
International Business
B.A. 1966, George Washington University
- John Arthur Stockman, Virginia
Business Administration
B.A. 1967, University of Maryland
- William Vincent Streicher, Maryland
Business Administration
B.A. 1951, Rutgers, the State University
- Bernace Malvin Symm, Virginia
Business Administration
B.A. 1964, University of Maryland
- Edwin Henry Thorpe, Jr., Texas
Business Administration
B.B.A. 1958, Texas A&M University
- Clark Dorsey Todd, Jr., Pennsylvania
Health Care Administration
B.S. 1963, Marshall University
- Nicolas Valls, New York
International Business
B.B.A. 1962, Loyola University, La.
- Sister Charlotte Ann VanDyke, Washington
Health Care Administration
B.S. in Nursing 1963, University of Portland
- Lavon Dale Vannier, District of Columbia
Business Administration
B.B.A. 1963, University of Georgia
- Rafael Vigil, Florida
International Business
B.S. 1962, University of Maryland
- Frederick John von Batchelder, Maryland
Business Administration
B.B.A. 1968, George Washington University
- Thurman Watts, Illinois
Business Administration
B.B.A. 1958, Marshall University
- Elliot Jay Weinberg, New York
Health Care Administration
B.A. 1966, Hobart College
- Kenneth Willard Wood, Virginia
Health Care Administration
B.S. 1966, Mars Hill College
- Allen Oliver Woods, Michigan
Health Care Administration
B.A. 1967, George Washington University
- Donald David Woods, Pennsylvania
Health Care Administration
B.B.A. 1961, University of Pittsburgh
- Ruby Ruth Young, Maryland
Business Administration
B.S. 1963, Berea College
- Richard Paul Zaharoff, Pennsylvania
Business Administration
B.A. 1965, Washington and Jefferson College

MASTER OF PUBLIC ADMINISTRATION

- Henry Charles Rosicky, Virginia
Public Administration
B.A. in Ed. 1957, Wayne State College
- Steven David Swatek, Maryland
Public Administration
B.A. 1964, Creighton University

MASTER OF SCIENCE IN ADMINISTRATION

- Charles Henry Chase, Virginia
Industrial Personnel Management
B.S. 1933, U.S. Military Academy
- Charles Earl Connaway, Virginia
Controllership
B.A. 1949, Baylor University

- Billy Ray Cramer, Virginia
Industrial Personnel Management
B.A. in B.A. 1966, University of Maryland
- John McElroy David, Virginia
Management Engineering
B.S. in Mining Engr. 1951, Virginia Polytechnic Institute
- Francis Xavier Faherty, Maryland
Automatic Data Processing
B.A. 1965, George Washington University
- John Markham Ferguson, Virginia
Automatic Data Processing
B.S. 1945, U.S. Military Academy
- Frederick Joseph Ilseman, Jr., Virginia
Management Engineering
B.S. 1952, U.S. Naval Academy
- John Edward Jarvies, Virginia
Management Engineering
B.S. 1951, University of Utah
- Stuart Cain Johnson, Virginia
Management Engineering
B.S. 1964, U.S. Naval Academy
- Willard Douglas Jones, Virginia
Management Engineering
B.S. in I.E. 1966, North Carolina State University at Raleigh
- Valentine Francis Lynch, Virginia
Systems Management
B.A. 1962, Fordham University
- Walter Ficek Marshall, Virginia
Automatic Data Processing
B.A. 1952, University of Michigan
- Thomas Leo McGovern, Maryland
Automatic Data Processing
B.Gen.Ed. 1966, University of Nebraska at Omaha
- Bruce Merritt, Georgia
Automatic Data Processing
B.S. in Com. 1941, University of Georgia
- Fred Morton Nevitt, Jr., Virginia
Systems Management
B.A. 1967, George Washington University
- Raymond Joseph Oglethorpe, Jr., Arizona
Automatic Data Processing
B.S. in E.E. 1966, University of Arizona
- Henry Godwin Parker, Virginia
Management Engineering
B.S. 1951, Virginia Polytechnic Institute
- Morris Pollak, Virginia
Management Engineering
B.S. 1952, U.S. Naval Academy
B.S. in E.E. 1958, U.S. Naval Postgraduate School
- William David Reid, Pennsylvania
Automatic Data Processing
B.S. 1966, Pennsylvania State University
- Robert Lee Scarborough, Jr., Virginia
Management Engineering
B.S. 1953, University of California, Los Angeles
- Irving Thomas Sheppard, Virginia
Management Engineering
B.S. 1962, Florida State University
- Maurice Harry Werness, Virginia
Management Engineering
B.S. 1954, U.S. Naval Academy
- Paul Gregg Woods, Virginia
Automatic Data Processing
B.A. 1952, Oklahoma State University

MASTER OF SCIENCE IN BUSINESS ADMINISTRATION

- Frederick DeFilippis, Virginia
B.S. 1950, Brooklyn College
- Eddie Demonn Dunagan, Alabama
B.S. 1953, University of Texas at Austin
- Perry Root Taylor, Jr., Virginia
B.S. 1945, U.S. Naval Academy
- Adolf Karl Waizecker, Virginia
B.E. 1964, City College, New York

MASTER OF SCIENCE IN FINANCIAL MANAGEMENT

- Eugene Samuel Bailey, Jr., Maryland
B.S. in E.E. 1950, University of Maryland
B.S. in B.A. 1962, Johns Hopkins University
- Robert Alton Beausoleil, District of Columbia
B.S. in B.A. 1949, Northeastern University

Nicholas Edward Bedessem, Maryland
B.S.S. 1953, St. Mary's College, Minn.
George Robert Campbell, Maryland
B.S. 1960, Pennsylvania State
University
Jeffrey Marlin Cohen, Maryland
B.S. 1965, Pennsylvania State
University
James Parkhurst Cotton, Michigan
B.S. in Bus. 1961, Indiana University
Robert Carroll Davis, Maryland
B.S. 1959, Loyola College
Dennis James Fischer, Virginia
B.A. 1961, Vanderbilt University
George William Folta, District of
Columbia
B.S. 1941, U.S. Naval Academy
B.S. in E.E. 1948, U.S. Naval
Postgraduate School
Charles Patrick Gallagher, Virginia
B.S. 1959, B.A. 1964, University of
Maryland
Billy Mack Hutchinson, Virginia
B.S. in B.A. 1951, Austin College
James Vincent Jolliff, Maryland
B.S. 1954, U.S. Naval Academy
M.S. 1962, Webb Institute of Naval
Architecture
Herbert Victor Leonhardt, Virginia
B.S. 1948, Virginia Polytechnic
Institute
M.S.E. 1955, Princeton University

Kenmore Reed McManes, Virginia
B.S. 1957, U.S. Naval Academy
B.S. in E.E. 1964, U.S. Naval
Postgraduate School
John Wood Messer, New York
B.A. 1953, University of Michigan
James Robert Morrison, Virginia
B.A. 1948, University of Michigan
B.B.A. 1950, University of Washington
Robert Francis Schramm, Maryland
B.S. in Ed. 1948, Bloomsburg State
College
John Richard Schuster, Maryland
B.S. 1960, University of Maryland
Samuel Simkin, Virginia
B.S. in B.A. 1948, Temple University
Willard Bruce Smith, District of Columbia
B.S. 1966, University of Cincinnati
John Charles Studt, Virginia
B.A. 1961, George Washington
University
Charles William Thomas, Maryland
B.S. in E.E. 1949, Brown University
Duncan Patterson Wallace, Sr., Virginia
B.A. 1966, George Washington
University
Charles Montgomery Williams, Virginia
B.B.A. 1965, George Washington
University
Kenneth Benjamin Wilson, Maryland
B.S. 1954, U.S. Naval Academy

MASTER OF SCIENCE IN GOVERNMENTAL ADMINISTRATION

Wayne Lee Adamson, Maryland
B.M.E. 1962, Georgia Institute of
Technology
John Joseph Appel, Jr., Maryland
B.A. 1953, George Washington
University
L.L.B. 1956, University of Maryland
Harvey Chaney Bush, Maryland
B.B.A. 1957, Georgia State College
Vincent Robert Doyle, Maryland
B.A. 1951, University of Maryland
James Vaughley Fare, Jr., Virginia
B.A. 1959, University of Washington
George Edward Fauth, Jr., Maryland
B.S. 1952, University of Baltimore
Lowell Gurke Genebach, Jr., Virginia
B.S. 1948, U.S. Military Academy
Jesse Henry Johnson, Virginia
B.S. 1945, U.S. Military Academy

Neubar Kamalian, District of Columbia
B.S. in M.E. 1959, University of
Wisconsin
Lawrence Levinson, Maryland
B.A. 1961, Hunter College
William Roger McGrann, Maryland
B.S. 1959, St. John's University,
Minnesota
J.D. 1964, University of Minnesota
Joseph Edward Murphy, Maryland
B.A. 1965, Frostburg State College
Michael Bernard Peceri, Florida
B.S. 1951, Rider College
George William Peters, Maryland
B.S. in Ind.Engr. 1960, University of
Pittsburgh
Louis Jay Sirkin, Maryland
B.A. 1959, University of Maryland
Richard Carl Stewart, Virginia
B.A. 1965, State University of New
York at Buffalo

MASTER OF SCIENCE IN PERSONNEL ADMINISTRATION

- Stanley Jefferson Bailey, Jr., Maryland
B.S. 1960, U.S. Naval Academy
B.S. 1966, U.S. Naval Postgraduate School
- Joseph Edward Ball, Virginia
B.S. 1964, University of Arkansas
- Ronald Earl Becker, Maryland
B.A. 1966, University of Virginia
- John Harrison Butler, Maryland
B.S. 1962, U.S. Naval Academy
- Donald Creighton Clark, Maryland
B.S. 1953, Howard University
- William John Cook, Virginia
B.S. 1961, Drexel Institute of Technology
- Hubbell Young Davidson, Maryland
B.S. 1944, U.S. Naval Academy
- Leo Joseph Donahue, Massachusetts
B.A. 1964, University of Maryland
- Richard Thomas Duncan, Jr., Maryland
B.S. 1948, U.S. Naval Academy
B.S. 1962, U.S. Naval Postgraduate School
- Ernest Collis Fischer, Louisiana
B.S. 1962, U.S. Naval Academy
- Albert Joseph Genetti, Maryland
B.S. in Forestry 1938, Michigan State University
- Ralph William Giasi, Pennsylvania
B.A. 1962, Brown University
- Mitchell Melvin Hall, Maryland
B.S. 1949, Johns Hopkins University
- Stella Mae Hatcher, Virginia
B.A. 1964, George Washington University
- Phillip Hugh Herndon, Florida
B.S. 1953, University of Georgia
- Richard Allen Hippler, Virginia
B.A. 1963, Park College
- Thomas Monroe Holimon, Virginia
B.A. 1960, San Francisco State College
- Douglas Wayne Kegley, Maryland
B.S. in Engr. 1964, Johns Hopkins University
- Thomas Aquinas Keller, Maryland
B.S. 1961, University of Scranton
- Melvin Vernon LeBlanc, Virginia
B.S. 1942, Loyola University, La.
B.S. 1947, U.S. Military Academy
- William Louis LeConte, Maryland
B.C.E. 1959, Georgia Institute of Technology
- Dwain La Bounty Lengel, New Jersey
B.S. 1958, University of Maryland
- Wesley Elvin Lindsey, Jr., Virginia
B.S. 1949, U.S. Naval Academy
- Donald James Lipman, Maryland
B.S. 1962, Monmouth College, N.J.
- Edward Warren Lull, Virginia
B.S. 1955, U.S. Naval Academy
- John Joseph MacPherson, Maryland
B.S. 1952, U.S. Naval Academy
M.S. in Meteorology 1962, U.S. Naval Postgraduate School
- Helen Wolfe Martin, Maryland
B.A. 1965, George Washington University
- Clement Thomas Meehan, Jr., Pennsylvania
B.A. 1965, U.S. Naval Academy
- John Joseph Migliore, Maryland
B.A. 1961, Johns Hopkins University
- Chester Henry Miller, Jr., Maryland
B.S. 1956, Wilkes College
- Leonard Eugene Moodispaw, Maryland
B.S. 1965, American University
- Charles Herbert Munch, Virginia
B.A. 1957, Duke University
- Geoffrey Alan Nelson, Maryland
B.S. 1962, U.S. Naval Academy
- Arthur Hughes Norris, Maryland
B.A. 1947, Westminster College, Mo.
- Jerome Niva Pieti, Michigan
B.S. 1947, Northwestern University
- William Clayton Raposa, Virginia
B.S. 1967, University of Maryland
- Robert Phillip Rose, Virginia
LL.B. 1954, Northeastern University
- Robert Scott Satre, Virginia
B.S. 1950, U.S. Naval Academy
B.S. in Ae. 1958, U.S. Naval Postgraduate School
Ae.E. 1959, California Institute of Technology
- Grace Amanda Savage, District of Columbia
B.A. 1932, University of Colorado
- Erwin Herbert Schiff, Virginia
B.Gen.Ed. 1964, University of Nebraska at Omaha
- Francis De Pau Schuyler, Florida
B.Gen.Ed. 1964, University of Nebraska at Omaha
- John Berlin Sharp, Jr., Mississippi
B.S. 1960, U.S. Naval Academy
B.S. 1967, U.S. Naval Postgraduate School

Whitlock Nelson Sharpe, Texas
 B.A. 1961, University of California, Berkeley
 Harry McClure Smith, Florida
 B.S. 1939, Millersville State College
 Henry Hodges Stansbury, Maryland
 B.A. 1963, University of Maryland
 David Francis Staple, Maryland
 B.S. 1952, U.S. Naval Academy
 B.S. 1958, U.S. Naval Postgraduate School
 Charles Edward Stewart, Virginia
 B.S. in Ed. 1962, Old Dominion College
 Oliver Day Street III, Alabama
 B.A. 1946, U.S. Military Academy
 David William Sutter, Virginia
 B.A. 1959, Loras College
 Elliott Philip Sydnor, Jr., Kentucky
 B.S. 1952, Western Kentucky University
 George Irwin Thompson, California
 B.A. 1952, University of California, Los Angeles
 M.A. in I.A. 1964, George Washington University

Terrence Stephen Todd, Maryland
 B.S. 1962, U.S. Naval Academy
 Arthur Brinkley Trammel, Maryland
 B.S. 1957, U.S. Naval Academy
 B.S. in E.E. 1962, U.S. Naval Postgraduate School
 Joseph George Trebes, Jr., Maryland
 B.S. in B.A. 1956, Loyola College
 Larry Neill Ward, Virginia
 B.S. 1956, The Citadel
 Richard LaSere Weidman, Maryland
 B.S. 1963, U.S. Naval Academy
 Ernest Edward Wilson, Louisiana
 B.A. 1964, George Washington University
 James Edgar Wilson, Jr., Virginia
 B.S. 1952, U.S. Naval Academy
 Robert James Yoos, Maryland
 B.A. 1960, Columbia University
 Donald White Zang, Maryland
 B.E.S. 1959, Johns Hopkins University

MASTER OF SCIENCE IN PUBLIC ADMINISTRATION

Robert Lee Geasland, Delaware
 B.S. 1954, U.S. Military Academy
 Byron Marcum Mowry, District of Columbia
 B.S. 1950, Michigan State University

Merrill Bowen Walters, Washington
 B.S. in Ed. 1956, Utah State University of Agriculture and Applied Science

DOCTOR OF BUSINESS ADMINISTRATION

Peter Paul Dawson, District of Columbia
 Dissertation: *A Study of the Application of Certain Business Management Practices to the Problem of Measuring Curriculum Quality and Teaching Effectiveness in an Institution of Higher Learning*
 B.A. 1939, University of Iowa
 M.S. in B.A. 1965, George Washington University

Robert Clay Ellis, Ohio
 Dissertation: *Decision Trees Applied to Capital Investment and Technological Uncertainty: A Case Study*
 B.S. in C.E. 1951, M.S. in B.A. 1958, University of Missouri

Robert Lee Mandeville, Maryland
 Dissertation: *A Comparative Study of Self-perceived Decision Process Influence Exerted by NASA Program Managers, NASA Project Managers, and Industry Managers on NASA-funded Projects*
 B.S. 1952, M.B.A. 1960, St. Louis University

Otto Barnhart Martinson, Jr., Colorado
 Dissertation: *A Standard Classification System for the Indirect Costs of Defense Contractors in the Aircraft Industry*
 B.A. 1960, M.B.A. 1962, George Washington University

Stanley Robert Sitnik, Virginia
 Dissertation: *A Method to Measure and Express Contractual Plan Total Cost*
 B.S. 1959, Georgetown University
 M.B.A. 1963, Seton Hall University

Thomas Clair Varley, Virginia
 Dissertation: *Data Input Error Detection and Correction Procedures*
 B.A. in Govt. 1960, M.A. in Govt. 1962, George Washington University

Jack Winn White, Kentucky
 Dissertation: *Administrative Problems Encountered in the Operation of Community Mental Health Centers*
 B.S. 1958, University of Kentucky
 M.B.A. 1964, George Washington University

Tilton Lee Willcox, North Carolina
 Dissertation: *Survival Considerations for the Small Securities Broker-Dealer in the District of Columbia*
 B.S. 1949, U.S. Military Academy
 M.B.A. 1963, George Washington University

DOCTOR OF PUBLIC ADMINISTRATION

Marvin Roger Burt, Maryland
 Dissertation: *A Critical Appraisal of Program Analysis in the Federal Government, with Particular Attention to Health Problems*
 B.A. 1958, University of California, Los Angeles
 M.P.A. 1965, George Washington University

James Vinson Milano, New Jersey
 Dissertation: *Development and Implementation of a Management Information System*
 B.S. 1940, West Virginia University
 M.B.A. 1954, University of Pennsylvania

SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

Student Marshal: Patricia Jean Moser

BACHELOR OF ARTS

Craig Ellis Anderson, Michigan
 International Affairs
 John William Bagnole, New Jersey
 International Affairs
 (With Distinction)
 Richard Lewis Baltimore III, New York
 International Affairs
 Anthony James Barbieri, New York
 International Affairs

Kearney Douglas Bennett, Virginia
 International Affairs
 Robert Stephen Berry, Pennsylvania
 Public Affairs (With Distinction)
 Janet Louise Blizzard, Massachusetts
 Public Affairs
 Norman James Brouwer, Michigan
 International Affairs

- Philip Schram Brown, Ohio
Public Affairs (Special Honors)
- Frank Dietrich Buchholz, New York
International Affairs
- Karen Ann Charbonneau, Virginia
International Affairs
- Thais Heald Coburn, District of
Columbia
International Affairs
- Robert Eugene Cole, Virginia
Public Affairs
- Howard Vincent Cooperider, Jr.,
Virginia
International Affairs
- John Arnett Cord, Virginia
International Affairs
- James Dennis Crabb, Kansas
International Affairs
- Edward Franklin Crawford, New
Hampshire
International Affairs
- John Patrick Cronin, Massachusetts
Public Affairs
- Douglas Nelson Cruickshank, Illinois
International Affairs
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B.A. 1964, University of Maryland

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International Affairs
B.A. 1958, LaSalle College
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B.A. 1967, Westminster College, Utah
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International Affairs
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University
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International Affairs
B.A. 1967, Southern Connecticut
State College

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- Dr. Edith Seville Coale Scholarships:* Susan M. Bland, Nancy D. Briggs, Madonna A. Browne, Kathryn K. Guyton, Beverly A. Oliphant, Barbara B. Travis
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- Columbian Women Scholarships:* Janet L. Brushwood, Laura J. Castro, Maureen E. Crittenden, Beverly A. Holoka, Evonne M. Jonas, Anne C. Yetter
- Commonwealth of Massachusetts Board of Higher Education Medical School Scholarship:* Robert S. Nierman
- Counsel for Tobacco Research U.S.A. Scholarships:* Edwin C. Tan, Carlos O. Urrutia-S
- Daughters of the American Revolution Scholarship:* Madonna A. Browne
- Isaac Davis Scholarship:* Craig Storti
- District of Columbia Institute of Public Accountants Scholarship:* Charles E. Kincaid, Jr.
- Estella Constance Drane Scholarship:* Gerald I. Bell
- Educational and Cultural Trust of the Electrical Industry Medical School Scholarship:* Robert H. Patterson, Leslie A. Shapiro
- J. W. Ehrlich Foundation Scholarships:* Peggy A. Cooper, Wilson Curle
- Robert Farnham Scholarship:* Linda C. Caul
- Esther Brigham Fisher Scholarship:* Anne I. Webb
- Friendship Business and Professional Women's Club Scholarship:* Edythe S. Danick
- General Motors College Scholarships:* Diana S. Blackmon, Leonard P. Gianessi, Susan A. Jackson, Steve R. Johnson
- George Washington University Medical Alumni Scholarships:* Paul H. D'Amato, Thomas W. Furlow, Jr., Michael Oliff, Salvatore C. Santangelo
- Georgetown Business and Professional Woman's Club Scholarship:* Hortensia M. Klos
- Louis E. Giles Memorial Scholarship:* James M. Chandler
- Mildred Green Memorial Scholarship Fund:* Ruth A. Rice
- Anna Spicker Hampel Scholarship:* Deborah K. Modrak
- Julian O. Hargrove Scholarship:* Robert C. McClenon
- Elma Lewis Harvey Scholarship:* Doris W. Babb
- Hazelton Scholarship:* Veronona E. Elms
- Health Professions Scholarship Program:* Anthony W. Adams, Robert J. Allen, Jules R. Altfas, Joseph M. Andrus, Thomas Annos, Roy J. Apter, David E. Ascarelli, Terence L. Babcock, John Balacki, Patricia J. Barnes, Stuart A. Becker, Joseph B. Bikowski, Jr., Kathleen A. Bis, Robert W. Bonar, William D. Boyd II, Robert C. Bransfield, George A. Brenner, Betty L. Brooks, Allen F. Browne, Ronald C. Burton, Andrew A. Ceavatta, Jr., Michael A. Cerruti, John J. Chabalko, John L. Clark, Leo J. Clark, Marcia C. Cleveland, Joseph A. Crawford, Maureen E. Crittenden, Joseph T. Daly, Gerald F. Davis, James W. Delameter, George G. Edwards, Jr., Allan M. Eisenbaum, John R. Emmett, John H. Exner, Anne H. Fine, Paul M. Fine, Robert M. Fine, Norman H. Fitz-Henley, Carl W. Foeller, Jr., Sherman S. Fox, Peter C. Freis, Jr., Thomas W. Furlow, Jr., Steven C. Garner, Robert J. Gerety, Peter R. Gerkin, Jared D. Gerstein, Vito A. Giannuzzi, Gary R. Gibbons, Douglas W. Gibson, Robert J. Glowitz, Jay S. Goldberg, Clifford J. Goodman, Jr., Barry C. Gorman, Mark W. Greenwood, Howard J. Gross, Kathryn K. Guyton, Jeffrey D. Harris, Robert J. Harris, Thomas E. Higgins, John C. Hoefs, Taylor A. Jeppson, Norman B. Jetton, Raymond E. Joseph, Michael A. Kessler, Patricia King, Rodney B. Kovick, Michael J. Krzyzkowski, Richard A. Lewis, Jon E. Long, Winthrop S. MacLaughlin, Jr., Michael Mendelson, Paul D. Miller, Paul R. Mitchell, Ronald P. Monteverde, Kenneth P. Moritsugu, James H. Mowery, Warren F. Muth, Robert S. Nierman, Donald E. Noble, Fred G. Odere, Michael Oliff, Alan J. Oram, Robert C. Osborne, David E. Owens, Frederick W. Parker III, Philip Paul, Michael L. Pearson, Harold C. Pillsbury III, Anthony R. Potenza, Burton L. Redd, Richard B. Reff, Richard M. Rytting, Joseph H. Schenk, Steven A. Schlachter, Anita K. Schnur, Robert W. Schulz, Gabriel F. Sciallis, Leslie A. Shapiro, Thomas L. Shreeve, Howard N. Smith, Seth W. Snover, Barry L. Strauss, Thomas F. Street, Michael E. Sussman, Richard L. Ward, Michael D. Washburn, Richard W. Weiss, Richard M. Whalen, David H. Winston, John D. Wjocik, Craig D. Woodard, Roger S. Woodward, Larry Yip, Paul T. Yoder, John J. Zieminski, Larry G. Zimmerman

- George F. Henigan Scholarships in Debate:* Roy K. Chang, Isa Natovitz, Stephen R. Remsberg, John P. Warner
- John W. Hill Foundation Medical School Scholarship:* Thomas F. Street
- Jewish War Veterans' Auxiliary Scholarship:* Bonnie M. Green
- Robert Woods Johnson Scholarship Fund:* Patricia J. Barnes, Peter C. Freis, Jr.
- Amos Kendall Scholarship:* Mary S. Webb
- Key Club of Walt Whitman High School Scholarship:* Gloria Ivey
- Kl-Wives of Washington Scholarship Fund:* Heide B. Horsley, George W. Tietjen
- L. Poe Leggette Memorial Scholarship Established by WRGW:* Veronona E. Elms
- Marriott Foundation Scholarship Fund:* Marcia L. Hall
- Eugene and Agnes E. Meyer Scholarships:* John K. Baska, Calvin E. James, Barbara S. Jewler, Suzann Keeney, Patricia J. Moser
- Mitchell-Stancioff Scholarship:* Raymond T. Rye II
- National Law Center Honor Scholarships:* Brian E. Barkley, Martha E. Bryan, Howard R. Green, Robert Katzberg, Joel S. Turtle
- National Law Center Trustee Scholarships:* Donald M. Barnes, John W. Blouch, Alvin P. Blyer, Thomas S. Brigham, Warner F. Brundage, Jr., Francis L. Burk, Jr., Linda A. Cinciotta, Elaine A. Crane, John S. Ebel, John W. English, Henry L. Feuerzeig, Leslie G. Fleet, Marc L. Fleischaker, Joel F. Gardiner, Robert K. Gardner, Steven Garfinkel, Lawrence G. Graev, Robert L. Green, Jeffrey W. Grove, Bruce H. Hanson, Jack Hassid, Michael D. Hausfeld, Donald B. Hordes, Roger L. Hunt, William E. Isaeff, William R. Loftus, Alexander M. Mackie, Douglass J. McCollum, Harvey J. Nathan, Terry A. Newendorp, Kris R. Nielsen, Elaine F. Palumbo, Louis I. Parley, Kenneth R. Pike, Kieron F. Quinn, Gary G. Quintiere, Douglas G. Robinson, Alan I. Rubinstein, Kenneth D. Salomon, Walter C. Schlieman, Jr., Daniel C. Schwartz, Robert R. Smiley, Marshall A. Snider, Ronald I. Tish, Lawrence H. Wechsler, Samuel H. Weissbard
- Helen Marie and Thomas E. Orr Scholarship:* Sharon M. O'Connell
- Chas. Pfizer Medical Scholarship Program:* Samuel J. Scott, Jr.
- Phi Delta Delta Scholarship:* Elaine F. Palumbo
- Phi Delta Gamma Scholarship:* Maryellen S. Lowe
- Henry Whitefield Samson Scholarship Fund:* Lois M. Cheesman, Stephen T. Earls, Barry J. Efros, Dorothy R. Fait, Margaret F. Ferguson, Kay A. Ferrell, Francis T. Gieringer III, Carole A. Gompertz, Stanley B. Grimm, Helen L. Jeffrey, Mark L. Labovitz, Alan M. Levitan, Stephen H. Loitz, Leonard Lubart, Bonnie I. Mulcahy, Mary J. Pagan, Robert E. Pellenburg, Karen M. Radius, Adele M. Shapanka, Edward C. Silverman
- School of Engineering and Applied Science Scholarships:* Jacob M. Azrael, Jerrold L. Bonn, Richard M. Curtin, Robert J. Keltie, Steven T. Momii, William T. Packard, Michael W. Rohrer, Michael L. Rothschild, Curtis A. Schroeder, Karen S. Spindel, Wesley A. Winchell
- School of Medicine Scholarship Fund:* Richard B. Brown, Carl W. Foeller, Jr., Richard L. Kirby, Burton L. Redd, Patrick J. Sullivan, Laird S. Swensen
- Lula M. Shepard Scholarship:* Frank D. Buchholz
- Sigma Delta Chi Foundation of Washington, D.C. Scholarship:* Sheila J. Moore
- David Perry Steinman Memorial Scholarship Fund:* William S. James
- Mary Lowell Stone Scholarship:* Shelesa L. Allison
- Charles Clinton Swisher Scholarships:* Neil DeHaan, Jr., Linda E. Demkovich
- Tau Kappa Epsilon Scholarship:* Dennis W. Arrow
- University Hospital Scholarships in Medical Technology:* Nancy K. Beck, Bonita M. Bundy, Katherine A. Donovan, Helena O. Glidden, Carol C. Kendrick, Susan M. Kyle, Lynda K. Michelson, Virginia J. Profita, Linda S. Renfrow, Susan H. Ullrich, Barbara L. Yalisove
- University Women's Club, Inc., Memorial Fund Scholarship:* Michele N. Cohen
- James J. Whisman Scholarship:* Jules R. Altfas
- Abigail Ann Brown and Henry Kirk White Scholarship Fund:* Susan Goldstein
- John Withington Scholarship:* Judy A. Coughlin
- Wolcott Foundation Scholarships:*
- Iowa Wolcott Scholar:* Robert R. Kyser II
- New Jersey Wolcott Scholar:* Alan Dlugasch

Pennsylvania Wolcott Scholar: Charles F. Spurlock
Virginia Wolcott Scholar: Richard D. Gnodde
Ellen Woodhull Scholarship: Richard G. Epstein
Zonta Club Scholarship: Irene H. Lawson

GRANTS-IN-AID

Inner-city Tuition Grants: Gerald I. Bell, Elizabeth A. Bowie, Diedre L. Douglas, Sheila M. Hester, Sandra C. McDowell, Vernon L. Russell
Student Activities Grants: Seymore A. Abrons, Robert S. Armell, Lenox M. Baltimore, Jr., Ralph E. Barnett, Richard B. Baughman, Reginald M. Bonhomme, James D. Bridgeman, Clifton A. Brown, Henry M. Bunnell, Charles R. Campbell, Robert L. Carter, William L. Collins, John J. Comitz, John L. Conrad, Bernard E. Coulehan, John J. Cowan, Mario A. Cruz, Bernard D. Day, Jeffrey E. DeLong, Robert W. Dennis, Charles R. Duda, Georges R. Edeline, Kenneth R. Ferris, Dennis G. Gallino, Mark R. Geier, Ronald Gold, William M. Golden, Raymond E. Graham, Fred Grays, John G. Grosso, Edwin H. Herrick, Jr., William E. Hoffer, James Isom, Maurice B. Johnson, Philippe G. Jones, Raymond V. Jones, Kent H. Keith, Charles H. Kendall, Charles B. King, William N. Klossner, William P. Knorr, George B. Korte, Jr., Vincent P. Krevinas, Rodolfo LaPorta, Steven M. Legum, Steven J. Loveless, William J. Maloney, Duane S. Marusa, Robert A. Mazzoni, Ronald K. McPherson, Robert Meyer, Gary W. Miller, Robert P. Moltz, Francis A. Mooney, Ronald C. Nunn, Evaristus E. Ogu, Garland F. Pinkston, Jr., Harry J. Powers, Gerald P. Price, Jr., Robert J. Reynolds, Harold C. Rhyne, Timothy P. Riordan, David E. Ritter, Murray A. Rosenberg, Cengiz Sagcan, Ned S. Scherer, William E. Sims, Jr., David O. Sollenberger, David A. Spiker, Eric R. Spink, Roger M. Strong, James F. Swentek, Walter Szczerbiak, Michael S. Tallent, Robert J. Tallent, Richard J. Trent, Philip N. Walsh
Student Leader Grants: Ronda L. Billig, James J. Knicely, Paul R. Panitz, Patricia A. Parsons
Tuition Grants: Sylvia J. Blackburn, Maria A. Brice, Karen E. Brock, Dominic S. Cooper, Peggy A. Cooper, William A. Derrick, Jr., Arnisha L. Dickinson, Alvin G. Douglass, Jr., Darryl H. Fagin, Leo J. Foster III, Maureen C. Gilliam, Marcia L. Hall, Robert Hardin, Barbara J. Hargrove, William A. Hunt, Melissa C. Johnson, Sandra E. Johnson, Constance L. Kibler, Kenneth P. Love, Lillian E. Manning, William J. Massie, Jr., Phyllis D. Parker, Francis B. Pipestem, Linda L. Ray, Wallace W. Sherwood, Gwynette R. Smith, Harold A. Tate, Arthur Q. Tyler, Jr., Edith N. West, Jacqueline Worthly

PRIZES

Alpha Chi Sigma Freshman Awards in Chemistry: Stephen David Forner, George Monson Haddad, Jr., Bruce Philip Meinhard
Alpha Chi Sigma Senior Award in Chemistry: Peter George Tarasoff
Alpha Delta Pi Award in scholarship and leadership: Doris Winifred Babb
Alpha Kappa Psi Award in Commerce: Jonathan Michael Rogoff
American Institute of Chemists Award in Chemistry: Robert Craig McClenon
American Medical Women's Association, Inc., Awards: Heide Billes Horsley, Beverly Ann Oliphant
American Security and Trust Company Award to a graduating senior in the National Law Center for excellent work in estate planning: Richard I. Goldsand
Norman B. Ames Memorial Award in Engineering and Applied Science: Sandy Joel Marenberg
Byrne Thurtell Burns Award in Organic Chemistry: Robert Craig McClenon
Wilbur J. Carr Award to that student in the graduating class who has demonstrated outstanding ability in the study of international affairs and who has given evidence of possessing in marked degree the qualities which produce the good citizen and the dedicated public servant: James Jeffrey Knicely
Chemical Rubber Company Award in Chemistry: Nadine Joyce Iroff

- Chi Omega Award in Social Sciences:* Irene Helen Lawson
- Columbian Women Award to the graduating senior woman who in her undergraduate life has most nearly fulfilled the objectives of Columbian Women:* Arlyne Fran Katz
- John Henry Cowles Awards in Government:* Charles Marshall Scott (School of Government and Business Administration), Patricia Jean Moser (School of Public and International Affairs)
- E. K. Cutter Award in English:* Ellen Phillips Colness, Lorraine Kathleen Middleton
- Isaac Davis Awards in Public Speaking: First Prize,* David Simon Fishback; *Second Prize,* Norbert Steven Linder; *Third Prize,* Judith Claire Chirlin
- Delta Gamma Award for scholarship, extracurricular activities, and service to the University:* Elizabeth Kay Spahn
- Samuel M. and Miriam S. Dodek Award in Endocrinology:* Beverly Ann Oliphant
- Henry Grattan Doyle Memorial Award to an outstanding senior student for excellence in Spanish:* Carol Ann Broda
- Elton Award in Greek:* George John Lenches
- Jesse Frederick Essary Award to that student who has given promise of sound citizenship and ability in "forthright reporting":* Bernard Daniel Colen
- Joshua Evans III Memorial Award to that man in the graduating class who has demonstrated his signal ability in good citizenship:* David Simon Fishback
- Willie E. Fitch Memorial Award in Chemistry:* Robert Craig McClenon
- Allie S. Freed Award to that member of the graduating class in the School of Medicine who has demonstrated exceptional proficiency in the field of preventive medicine:* Bethanne Foley
- Walter Freeman Award to a student in the graduating class in the School of Medicine who submits the best essay based on original investigation:* Paul Hartman D'Amato, Edward Graeme Koch
- Charles Glover Award to that student in the National Law Center who has attained the highest average grade in the third-year, full-time course:* Douglas George Robinson
- Alice Douglas Goddard Award in American Literature:* Allan Lee Kulikoff
- Edward Carrington Goddard Award in French:* Arlyne Fran Katz
- Morgan Richardson Goddard Award in Commerce:* Fernando José Dória Montenegro
- Hamilton Watch Award in Engineering:* Michael William Rohrer
- Alec Horwitz Award to the senior in the School of Medicine who has demonstrated exceptional proficiency in the field of surgery:* Paul Joseph Corso, Jr.
- Gardiner G. Hubbard Memorial Award in United States History:* William Stanley Mensh
- Oscar Benwood Hunter Award in Pathology:* Beverly Ann Oliphant
- Jacobi Medical Society Award in Pediatrics:* Depue Hazen Duffey, Jr.
- Howard Kane—A.F.A. King Obstetrical Society Award:* Kenneth Clark Cummings, Jr.
- Kappa Kappa Gamma Award in Biology:* David Stephen Senzel
- Minna Mirin Kullback Memorial Award in Statistics:* Cathryn Suzette Dippo
- Lang Medical Publications Awards:* Irwin Henry Koff, Robert William Murray
- John Bell Lerner Award to that member of the graduating class of the National Law Center who attains the highest grade in the entire course for the degree of Juris Doctor:* Douglas George Robinson
- Huron W. Lawson Award in Obstetrics and Gynecology:* Richard Sheldon Margolis
- Craig Sterling Logan Memorial Award to the outstanding freshman man:* Roy Kanm Chang
- Martin Mahler Award in Materials Testing:* Robert Joseph Keltie
- Benjamin Manchester Award to a member of the graduating class of the School of Medicine who has an outstanding record and shows promise of real humanitarianism in the practice of medicine:* George William Tietjen
- Mortar Board Award to the woman student in the Sophomore Class having a scholastic standing of B or higher and the most outstanding record in activities:* Lesley Jill Alter
- C. V. Mosby Book Awards:* Warren Richard Berrie, Richard Bruce Brown, Arthur Jackson Speer Eberdt, Michael Sidney Horowitz, Eugene Lewis Speck
- Julius S. Neviasser Awards in Orthopaedic Surgery:* Robert Millman, Beverly Ann Oliphant, George William Tietjen

- Old Men Award to a man in the Junior Class who has made outstanding contributions to student activities:* David Allen Nadler
- Omicron Delta Kappa Award to that member of the Senior Class who, throughout his course, has done the most constructive work in student activities:* Richard Arnold Wolfsie
- Order of Scarlet Award to that member of the Sophomore Class who has the most outstanding record in extracurricular activities and service to the University:* Robert Allan Rosenfeld
- John Ordronaux Award to that member of the graduating class of the School of Medicine with the highest scholastic standing:* Beverly Ann Oliphant
- Phi Eta Sigma Award to the beginning male student attaining the highest scholastic average in his first full semester of work:* Steven Mark Yarnell
- Physics Departmental Award to the student with the highest average in Physics 1 and 2:* Anne Kramer
- Pi Beta Phi Award to that member of the Senior Class who, throughout her course, has done the most to promote student activities:* Susan Iris Rappaport
- Pi Lambda Theta Award in Teacher Education:* Bryn Lois Wolinitz
- Psi Chi Awards in Psychology:* Beverly Ann Holoka (Undergraduate), Gary Young Larsen (Graduate)
- Ruggles Award in Mathematics:* Richard Gary Epstein
- Dr. William G. Schafhirt Award to a senior student in the School of Medicine for the best original essay or thesis on some medical subject of current public interest:* Paul Hartman D'Amato
- Hermann and Johanna Richter Schoenfeld Award to a member of the graduating class for excellence in the historical and cultural phases of German studies:* George John Lenches
- Roche Award:* Beverly Ann Oliphant
- School of Engineering and Applied Science Distinguished Scholar to the senior who graduates with the highest standing:* Robert Joseph Keltie
- Sigma Tau Award in Engineering and Applied Science to the freshman who maintains the highest scholastic standing in the work of the entire year:* Jerrold Leonard Bonn
- Smith, Kline and French Award for the best undergraduate research project in psychology:* Barbara Zella Weiner
- Social Sciences Award:* Irene Helen Lawson
- Staughton Award in Latin:* Lawrence Phillips Davis
- James MacBride Sterrett, Jr., Award in Physics:* Calvin Eugene James
- Charles Clinton Swisher Historical Club Award to the student who submits the best essay covering some phase of medieval history:* Joy Ann Bilharz
- Theta Tau Activities Award in Engineering and Applied Science to the senior with the most outstanding record in activities for the entire period of his attendance:* Robert Joseph Keltie
- United States Law Week Award to an outstanding senior law student:* Daniel Carl Schwartz
- Upjohn Achievement Award:* George William Tietjen
- Jennie Hassler Walburn Award to the outstanding student in the field of civil procedure:* Samuel Held Weissbard
- Thomas F. Walsh Award to that student who submits the best essay in Irish history:* Sharon Maureen O'Connell
- Alexander Wilbourne Weddell Award to a candidate for a degree who writes the best essay on the subject of "the promotion of peace among the nations of the world":* Harriet Beth Marcus

ALUMNI AND ALLIED ASSOCIATIONS

THE GENERAL ALUMNI ASSOCIATION

The objectives of this association are to unite the graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and to promote the general welfare of the University.

Eligible members are those who have matriculated in any school of the University and who have left the University in good standing, or any person who is or has been a member of the teaching, research, or administrative staff of the University or of the Board of Trustees of the University. Active members are those eligible members who are current contributors (dues or otherwise) to or life members of the George Washington University General Alumni Association, the Alumni Association of any school of the University, or contributors to the Annual Support Program.

The Alumni Office is in Bacon Hall, 2000 H Street, N.W., Washington, D.C. 20006.

All alumni are urged to keep the Alumni Office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

RECIPIENTS OF ALUMNI ACHIEVEMENT AWARDS

February 22, 1969

Leighton Eggertsen Cluff, M.D. 1949

Harold Alden Wheeler, B.S. in Physics (W.D.) 1925

June 8, 1969

Joseph Baer Danzansky, B.A. 1935, J.D. 1936

Benjamin Haile DeMott, B.A. (W.D.) 1949

Winifred Grace Thompson, B.A. in Ed. 1950

RECIPIENTS OF ALUMNI SERVICE AWARDS

May 17, 1969

Charles E. Bish, M.A. 1937, Ed.D. 1942

Lemuel Jackson Embrey, B.A. 1937, LL.B., LL.M. 1949

Jerome Epstein, M.A. 1948, M.D. 1953

Philbrick McCoy, LL.B. 1922, LL.M. 1923, LL.D. 1957

Jack Morton, B.A. 1936

William F. Ryan, Jr. (Attended 1932-34)

Emilie Margaret White, B.A. 1907, M.A. 1910

GOVERNING BOARD 1969-70

President. — J. Dallas Shirley, B.S. in P.E. 1936, M.A. in Ed. 1945

Vice President. — Lyn Henderson Clark, B.A. 1954

Treasurer. — Reginald D. Barta, B.A. 1958, M.A. 1965

Secretary. — Nancy Broyhill Dudley, B.A. in Govt. 1965

Columbian College of Arts and Sciences:

Alice K. Andersen, B.A. 1941

Lyn Henderson Clark, B.A. 1954

Harold E. Mesirov, B.A. 1954, LL.B. 1957

Graduate School of Arts and Sciences:

Victor H. Cohn, Ph.D. 1961

Carl A. Linden, Ph.D. 1966

School of Medicine:

Harvey H. Ammerman, B.S. 1939, M.D. 1943

Jerome H. Epstein, M.A. 1948, M.D. 1953

George Speck, M.D. 1941

National Law Center:

Samuel J. L'Houmedieu, LL.B. 1951, LL.M. 1952

Bernard I. Nordlinger, B.A. 1929, J.D. 1933

Glen A. Wilkinson, J.D. 1938

School of Engineering and Applied Science:

Laurence R. Brown, B.S. in Engr. 1949, D.B.A. 1968

William J. Ellenberger, B.S. in E.E. 1930, B.S. in M.E. 1934

William H. Holt, B.S. in Engr. 1957, LL.B. 1961

School of Education:

Howard O. Johnson, M.A. in Ed. 1948, Ed.D. 1950

Richard Ray Roberts, M.A. in Ed. 1957, Ed.D. 1964

J. Dallas Shirley, B.S. in P.E. 1936, M.A. in Ed. 1937

School of Government and Business Administration:

William B. Belford, M.A. in Govt. 1960

Robert A. Kaye, B.A. in Govt. 1948, M.A. in Govt. 1950, D.B.A. 1961

Fred Winfield Weitzel, B.A. in Govt. 1958

School of Public and International Affairs:

John Alton Boyer, B.A. in Govt. 1948, J.D. 1950

Nancy Broyhill Dudley, B.A. in Govt. 1965

College of General Studies:

Reginald D. Barta, B.A. 1958, M.A. 1965

Thomas C. Keach, M.A. 1957

Geraldine Werner, B.A. 1948

Faculty:

Robert C. Willson, B.A. 1951

Alumni Trustees:

Harold K. Bradford, LL.B. 1942

Donald C. Cook, J.D. 1939, LL.M. 1940

Harry F. Dowling, M.D. 1931

Thaddeus A. Lindner, B.A. in Govt. 1951

William G. White, B.S. in C.E. 1936

Members-at-Large:

Edward W. Gnehm, Jr., B.A. 1966, M.A. 1968

Dayton M. Harrington, LL.B. 1942

Elma Williams, B.A. 1954

Regional Representatives:

Atlanta — John V. Skinner, J.D. 1962

Cincinnati — Robert J. Jones, B.A. 1949

Dallas — Harold M. Young, B.A. 1926

Denver — Harold W. Hudson, B.A. in Govt. 1941

Florida West Coast – Lewis Weiss, J.D. (Nat'l) 1930
 Los Angeles – Philbrick McCoy, LL.B. 1922, LL.M. 1923, LL.D. 1957
 Miami – Abiah A. Church, B.A. 1948, J.D. 1950
 Milwaukee – Donald W. Cole, M.B.A. 1957
 New York City – Hugh S. Wertz, B.S. in E.E. 1929, J.D. 1935
 North Jersey – John R. Busick, B.A. 1936
 Philadelphia – Kimber E. Vought, B.A. in Govt. 1943
 Phoenix – Frank A. Parks, LL.B. 1964
 St. Louis – William P. Oliver, Jr., J.D. 1949, M.A. in I.A. 1967
 San Francisco – Angelo May, M.D. 1937
 Salt Lake City – Vernon Romney, J.D. 1922
 Seattle – Oscar A. Zabel, J.D. 1926

THE GEORGE WASHINGTON UNIVERSITY MEDICAL ALUMNI ASSOCIATION

The George Washington University Medical Alumni Association, incorporated in 1959, continues the organization previously known as The George Washington University Medical Society.

The stated purposes of the Association are as follows: "This shall be a nonprofit organization international in scope, whose objectives shall be to provide constructive services for the alumni of the George Washington University School of Medicine, for furthering the art and science of medicine, research, and for the promotion of the welfare of the George Washington University School of Medicine, its students, the George Washington Hospital and its trainees."

Active membership in the Association consists of: all graduates of the School of Medicine; current members and, on application, past members of the teaching staff of the School of Medicine who hold Doctor's degrees; Doctors of Medicine who have had one or more years of postgraduate training in the George Washington University Hospital. Junior membership consists of all members of the student body of the School of Medicine during the time they are students.

The Medical Alumni Association maintains an office in the School of Medicine at 1331 H Street, N.W., Washington, D.C.

OFFICERS FOR 1969-70

President. – Maurice Gromet, B.A. 1931, M.D. 1934
President Elect. – Jerome Canter, M.D. 1955
First Vice President. – Marvin Footer, B.A. 1938, M.D. 1942
Second Vice President. – Thomas A. Wilson, B.A. 1942, M.D. 1944
Secretary. – Donald H. Glew, Jr., M.D. 1948
Treasurer. – John F. Mermel, M.D. 1960
Executive Council:
 Jerome Epstein, M.A. 1948, M.D. 1953
 Richard I. Kilstein, B.A. 1931, M.D. 1934
 Jack B. Kleh, B.A. 1942, M.D. 1944
 Angelo May, M.D. 1937
 Carolyn Pincock, B.A. 1931, M.D. 1934
 George Speck, M.D. 1941
 Allan Zellis, M.D. 1941

THE GEORGE WASHINGTON LAW ASSOCIATION

The George Washington Law Association was founded in 1912 and has been affiliated with the General Alumni Association since 1926. Its purposes as stated in the constitution are to promote high standards of legal education, to keep the alumni of the school in close touch

with one another, especially with members of their own classes, to gather and publish at intervals information as to the whereabouts and activities of these alumni, and to further the interests of the school.

Eligible members are those who have matriculated in the school or National University and have left in good standing, and any member or former member of the faculty of the school. Active members are those eligible members who are current contributors to the Law Annual Support program of the University and life members of the George Washington Law Association.

The Association plans publication periodically of the Law Alumni Directory. Law Alumni are urged to keep the Alumni Office informed of their whereabouts so that directory information can be kept up to date.

OFFICERS FOR 1969-70

President.—Oliver Gasch, LL.B. 1932

First Vice President.—Joseph L. Brand, J.D. 1963

Second Vice President.—Philip F. Herrick, LL.B. 1933, LL.M. 1936

Third Vice President.—Marion Edwyn Harrison, LL.B. 1954, LL.M. 1959

Secretary.—Betty Ann Thompson, B.A. 1946, LL.B. 1948

Treasurer.—Alexander L. Stevas, B.A. 1949, LL.B. 1951

Executive Committee:

Joel Barlow, J.D. 1935

Michael P. Bentzen, LL.B. 1964

Henry A. Bertiner, Jr., J.D. 1964

Alvin Capp, B.A. 1961, J.D. 1964

Fred H. Daly, J.D. 1966

F. Elwood Davis, LL.B. 1943

Joseph A. DeGrandi, M.S. 1950, J.D. 1952

Joseph A. DePaul, LL.B. 1950

Lloyd Fletcher, J.D. 1939

Harold L. George, LL.B. (Nat'l) 1920

Philip A. Gagan, B.A. 1953, J.D. 1959

William S. Hochman, J.D. 1962

C. Timothy Hopkins, LL.B. 1963

Joseph D. Hughes, J.D. 1934

Clarence T. Kipps, Jr., J.D. 1953

Samuel J. L'Hommiedieu, Jr., LL.B. 1951, LL.M. 1952

Ronald E. Madsen, Sr., J.D. 1955

Milton E. Mermelstein, B.A. 1930, J.D. 1931

Katsugo Miho, LL.B. 1953

Milan C. Miskovsky, LL.B. 1956

Donald L. Mooers, LL.B. 1963

Bernard I. Nordlinger, B.A. 1929, J.D. 1933

Kenneth W. Parkinson, B.A. 1950, LL.B. 1952

Nad A. Peterson, B.A. 1950, J.D. 1953

B. R. Pravel, J.D. 1951

Gordon J. Quist, J.D. 1962

James Robertson, LL.B. 1965

William J. Rochelle, Jr., B.A. 1938, J.D. 1940

Robert D. Rolander, LL.B. 1953

John V. Skinner, Jr., J.D. 1962

Ethan Stroud, LL.M. 1956

Sidney Struble, J.D. (Nat'l) 1917, LL.M. (Nat'l) 1919

Gary L. Theurer, J.D. 1954

William C. Thornton, J.D. 1961

Richard A. Ward, J.D. 1965

Sterry R. Waterman, Law (1926)

George F. Wilsey, J.D. 1958
 Leon L. Wolfstone, J.D. 1939
 James O. Wright, J.D. 1938
 Joseph S. Wright, Jr., LL.B. 1963
 Glen A. Wilkinson, ex officio, J.D. 1938

THE ENGINEER ALUMNI ASSOCIATION OF THE GEORGE WASHINGTON UNIVERSITY, INC.

The Engineer Alumni Association was organized in 1936 and was incorporated in 1962. It has worked closely with the General Alumni Association since its organization. Its objects are to unite the graduates and Faculty of the School in closer fellowship, to promote the general welfare of the School and the University at large, to foster activities of the engineering organizations recognized by the University, and to advance the profession of engineering in general.

OFFICERS FOR 1969-70

President.—William H. Holt, B.S.E. 1957, LL.B. 1961
Vice President.—Raymond P. Morales, B.S. (E.E.) 1965
Secretary.—John L. Wolfgang, Jr., B.E.E. 1962, M.S. in Engr. 1967
Treasurer.—Douglas L. Jones, B.M.E. 1961, M.S. in Engr. 1965
Board of Trustees:

Rolph Albert, M.E.A. 1965
 Solomon S. Fineblum, B.M.E. 1950, M.S. in Engr. 1962
 Matthew Flato, B.E.E. 1949
 Harvey J. Flatt, B.E.E. 1963
 Francis J. Hughes, M.S. in Engr. 1965
 John R. Manning, B.S. in Engr. 1957, J.D. 1961
 Delmer C. Ports, B.S. in E.E. 1937
 Arthur E. Proctor, B.E.E. 1953
 Edwin O. Stengard, B.M.E. 1948
 Edward A. Wareham III, B.E.E. 1953
 Elmer W. Whitlock, Jr., B.E.E. 1954

THE SCHOOL OF EDUCATION ALUMNI ASSOCIATION

The School of Education Alumni Association was organized during the academic year 1968-69 in order to enlist the collective efforts and prestige of concerned alumni in shaping institutional goals and fostering continual growth and progress. Pursuant to these purposes, the Association, through social as well as academically-oriented gatherings, intends to strengthen the rapport among members and contribute to their professional advancement.

OFFICERS FOR 1969-70

Chairman.—David Iwamoto, M.A. in Ed. 1952, Ed.D. 1963

Governing Board:

Jane S. Bernot, B.S. in P.E. 1945
 Mary B. Curry, M.A. in Ed. 1950, Ed.D. 1968
 Helen M. Flint, Ed.D. 1957
 Avis T. Hawkins, M.A. in Ed. 1965
 Herman A. Howard, M.A. in Ed. 1961, Ed.D. 1969
 James W. Jacobs, B.S. in P.E. 1949, M.A. in Ed. 1952, Ed.D. 1964
 Howard O. Johnson, M.A. in Ed. 1948, Ed.D. 1950
 Samuel Kavruck, M.A. in Govt. 1950, Ed.D. 1954
 Norman J. Kerr, M.A. in Ed. 1961, Ed.D. 1969
 James A. Lally, Jr., Ed.D. 1966

Mary Mooney, B.A. in Ed. 1961
 Harry Pitt, B.S. in P.E. 1952, M.A. in Ed. 1955, Ed.D. 1965
 R. Ray Roberts, M.A. in Ed. 1957, Ed.D. 1964
 Ellwood A. Smith, Director of Alumni Relations
 Virginia C. Street, M.A. in Ed. 1966
 George B. Thomas, Sr., Ed.D. 1968

THE LIBRARY SCIENCE ALUMNI ASSOCIATION

The Library Science Alumni Association was organized in 1932 by graduates of the Division of Library Science and became an affiliate of the General Alumni Association in 1935. It was established to foster a closer relationship between the Faculty and graduates and to further the interests of the Division of Library Science and of the University as a whole.

OFFICERS FOR 1969-70

President.—Mildred C. Benton, B.A. in L.S. 1934
Vice President.—Mrs. Charles A. Quattlebaum, B.A. in L.S. 1939
Secretary.—Mary E. Kelso, B.A. in L.S. 1940
Treasurer.—Elinor Dunnigan, B.A. in L.S. 1930, M.A. 1932

THE GEORGE WASHINGTON UNIVERSITY NURSES ASSOCIATION

The George Washington University Nurses Association was organized in 1914. In 1936, this organization was made an integral part of the General Alumni Association, and graduates of the School of Nursing were accorded associated membership. The objects of the Association are to hold in unison the graduates of the George Washington University Hospital School for Nurses, to care for its sick members, and to promote the advance of nursing in the interest of the George Washington University Hospital.

OFFICERS FOR 1969-70

President.—Katherine M. del Valle
Secretary.—Juanita Love
Treasurer.—Alma Binks

WOMEN'S PHYSICAL EDUCATION ALUMNAE ASSOCIATION

The purpose of this organization is to foster and promote the teaching profession in the fields of Physical Education, Health, and Recreation. Its functions are (1) to attract students to the profession who show evidence of outstanding teaching capability, (2) to offer professional guidance to members in this field of work, (3) to render service to the community, and (4) to render service to the University.

OFFICERS FOR 1969-70

President.—Jane S. Bernot, B.S. in P.E. 1945
Secretary.—Patricia A. Bergan, B.S. in P.E. 1967
Treasurer.—Nan B. Smith, B.S. in P.E. 1962, M.A. in Ed. 1966
Council:

Calva K. Collier, B.S. in P.E. 1949
 Theresa Conroy, B.S. in P.E. 1963
 Lyndale H. George, B.S. in P.E. 1948, M.A. in Ed. 1952, A.P.C. 1961
 Lucie Haid, B.S. in P.E. 1940
 Laura Mulligan, B.S. in P.E. 1940
 Loretta M. Stallings, ex officio

REGIONAL ALUMNI CLUBS

Regional alumni clubs sponsored by the General Alumni Association are active in a number of areas. Information about the officers and activities of these clubs may be obtained from the Alumni Office of the University.

THE LETTERMEN CLUB

The membership of this organization shall consist of those men who, for participation in a sport at George Washington University, have been awarded varsity letters or freshmen numerals, who are no longer undergraduate students of the University; and those men who, for managing a freshman or varsity sport, received letters or numerals.

The objectives of the club are to (1) bring together on a social level former lettermen of all sports, (2) renew acquaintances and promote fellowship, (3) encourage higher ideals of intercollegiate athletics at the University, and (4) assist the University in matters pertaining to athletics when requested.

OFFICERS FOR 1969-70

President.—Joseph J. Bernot, B.S. in P.E. 1950, M.A. in Ed. 1953

Vice President.—Peter P. Labukas, B.S. in P.E. 1947, M.A. in Ed. 1948, A.P.C. 1959

Secretary.—C. Larry Beaver

Treasurer.—Stephen J. Korcheck, B.S. in P.E. 1954, M.A. in Ed. 1966

THE COLUMBIAN WOMEN

The objectives of this organization are (1) the promotion of acquaintanceship among its members, (2) the advancement of women by the founding of scholarships in the various departments of the University, and (3) the promotion of the interests of the University.

MEMBERSHIP

The following persons shall be eligible for active membership: (1) any woman who is currently registered or has been previously registered as a student in the George Washington University; (2) any woman member of the Faculties or Board of Trustees, any woman on the administrative staff; the wife of any member of the Faculties, Board of Trustees, or the administrative staff; and (3) any woman recipient of an honorary degree from the University.

OFFICERS FOR 1969-70

President.—Hazel Smallwood (Mrs. William B.) Hanback, B.A. 1940

Immediate Past President.—Sue Burnett (Mrs. Irving R.M.) Panzer, B.A. 1941

First Vice President.—Mary Barker (Mrs. Harry A.) Carson, M.A. 1957

Second Vice President.—Ruth Cammack, B.A. 1948

Recording Secretary.—Elizabeth Middlemas, B.A. 1934, M.A. 1941

Corresponding Secretary.—Hazel Bayne, B.A. 1925, M.A. 1930

Assistant Corresponding Secretary.—Maxine Rolle (Mrs. Augustus) Goodyear, B.A. 1924, M.A. 1925

Treasurer.—Lillian Guest, B.A. 1960

Assistant Treasurer.—Ruth E. Myer, M.A. in Govt. 1946

Historian.—Edith Maslin (Mrs. Finn) Ronne, B.A. 1940

General Counsel.—Mary M. Connelly, LL.B. 1922

THE WOMEN'S BOARD OF THE GEORGE WASHINGTON UNIVERSITY HOSPITAL

The object of this organization is to aid in every way the interests and advancement of the George Washington University Hospital. Meetings are held on the first Wednesday of each month, October to June, inclusive. Inquiries regarding membership should be addressed to the Corresponding Secretary, George Washington University, Washington, D.C. 20006.

OFFICERS FOR 1969-70

Honorary President.—Mrs. Cloyd H. Marvin

President.—Mrs. Alvin E. Parrish

First Vice President.—Mrs. Reginald E. Pledger

Second Vice President.—Mrs. Charles W. Thompson

Third Vice President.—Mrs. Robert S. Wild

Recording Secretary.—Mrs. Robert M. Silliman

Corresponding Secretary.—Mrs. Boyd L. Burris

Assistant Corresponding Secretary.—Mrs. A. Prentice Kenyon

Treasurer.—Mrs. Carl H. Walther

Assistant Treasurer.—Mrs. J. Blaine Harrell

Directors:

Mrs. Samuel M. Burgess II

Mrs. James J. Feffer

STATISTICAL RECORD

Summary of Registration 1968-69

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

| | FALL SEMESTER | | | SPRING SEMESTER | | |
|--------------------------|---------------|-------|-------|-----------------|-------|-------|
| | Men | Women | Total | Men | Women | Total |
| Lower Division | 1,423 | 1,407 | 2,830 | 1,326 | 1,309 | 2,635 |
| Upper Division | 668 | 1,003 | 1,671 | 665 | 989 | 1,654 |
| Unclassified | — | — | — | 1 | — | 1 |
| Total | 2,091 | 2,410 | 4,501 | 1,992 | 2,298 | 4,290 |

GRADUATE SCHOOL OF ARTS AND SCIENCES

| | | | | | | |
|--------------------------------|-----|-----|-------|-----|-----|-------|
| Master's Candidates | 336 | 376 | 712 | 306 | 333 | 639 |
| Doctor of Philosophy | 404 | 179 | 583 | 412 | 187 | 599 |
| Unclassified | 2 | 1 | 3 | 2 | 1 | 3 |
| Total | 742 | 556 | 1,298 | 720 | 521 | 1,241 |

SCHOOL OF MEDICINE

| | | | | | | |
|------------------------------|-----|----|-----|-----|----|-----|
| Doctor of Medicine | 383 | 32 | 415 | 380 | 32 | 412 |
|------------------------------|-----|----|-----|-----|----|-----|

NATIONAL LAW CENTER

| | | | | | | |
|--|-------|-----|-------|-------|-----|-------|
| Juris Doctor | 1,032 | 95 | 1,127 | 933 | 95 | 1,028 |
| Master's and Doctor's Degrees | 217 | 5 | 222 | 238 | 7 | 245 |
| Unclassified | 86 | 3 | 89 | 87 | 8 | 95 |
| Total | 1,335 | 103 | 1,438 | 1,258 | 110 | 1,368 |

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

| | FALL SEMESTER | | | SPRING SEMESTER | | |
|-------------------------|---------------|-------|-------|-----------------|-------|-------|
| | Men | Women | Total | Men | Women | Total |
| Undergraduate | 267 | 4 | 271 | 254 | 3 | 257 |
| Graduate | 1,026 | 13 | 1,039 | 994 | 12 | 1,006 |
| Unclassified | 64 | 1 | 65 | 61 | 1 | 62 |
| Total | 1,357 | 18 | 1,375 | 1,309 | 16 | 1,325 |

SCHOOL OF EDUCATION

| | | | | | | |
|-------------------------|-----|-----|-------|-----|-----|-------|
| Undergraduate | 24 | 210 | 234 | 22 | 209 | 231 |
| Graduate | 379 | 488 | 867 | 381 | 475 | 856 |
| Unclassified | 29 | 24 | 53 | 14 | 15 | 29 |
| Total | 432 | 722 | 1,154 | 417 | 699 | 1,116 |

SCHOOL OF GOVERNMENT AND BUSINESS ADMINISTRATION

| | | | | | | |
|-------------------------|-------|-----|-------|-------|-----|-------|
| Undergraduate | 139 | 30 | 169 | 133 | 23 | 156 |
| Graduate | 951 | 104 | 1,055 | 927 | 97 | 1,024 |
| Unclassified | 22 | 2 | 24 | 21 | 3 | 24 |
| Total | 1,112 | 136 | 1,248 | 1,081 | 123 | 1,204 |

SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

| | | | | | | |
|-------------------------|-----|-----|-----|-----|-----|-----|
| Undergraduate | 130 | 107 | 237 | 127 | 105 | 232 |
| Graduate | 121 | 43 | 164 | 106 | 46 | 152 |
| Unclassified | — | 1 | 1 | 1 | — | 1 |
| Total | 251 | 151 | 402 | 234 | 151 | 385 |

COLLEGE OF GENERAL STUDIES

| | | | | | | |
|-------------------------|----|----|-----|----|----|-----|
| Undergraduate | 44 | 17 | 61 | 50 | 12 | 62 |
| Graduate | 48 | 1 | 49 | 40 | — | 40 |
| Unclassified | 2 | 6 | 8 | 5 | 6 | 11 |
| Total | 94 | 24 | 118 | 95 | 18 | 113 |

DIVISION OF UNIVERSITY STUDENTS

| | | | | | | |
|-------------------------------|-------|-----|-------|-----|-----|-------|
| University students | 1,108 | 830 | 1,938 | 965 | 734 | 1,699 |
|-------------------------------|-------|-----|-------|-----|-----|-------|

SUMMARY

| | | | | | | |
|-------------------------|-------|-------|--------|-------|-------|--------|
| Undergraduate | 2,695 | 2,778 | 5,473 | 2,577 | 2,650 | 5,227 |
| Graduate | 4,897 | 1,336 | 6,233 | 4,717 | 1,284 | 6,001 |
| Unclassified | 1,313 | 868 | 2,181 | 1,157 | 768 | 1,925 |
| Total | 8,905 | 4,982 | 13,887 | 8,451 | 4,702 | 13,153 |

SUMMER SESSIONS REGISTRATION 1968

| | |
|-------|-------|
| Men | 2,790 |
| Women | 1,939 |
| Total | 4,729 |

COLLEGE OF GENERAL STUDIES OFF-CAMPUS STUDY

| | FALL SEMESTER | | | SPRING SEMESTER | | |
|-------------------|---------------|-------|-------|-----------------|-------|-------|
| | Men | Women | Total | Men | Women | Total |
| Degree Candidates | | | | | | |
| Undergraduate | 347 | 67 | 414 | 302 | 51 | 353 |
| Graduate | 1,106 | 62 | 1,168 | 1,347 | 68 | 1,415 |
| Total | 1,453 | 129 | 1,582 | 1,649 | 119 | 1,768 |
| Nondegree Status | 3,414 | 717 | 4,131 | 3,109 | 639 | 3,748 |
| Total | 4,867 | 846 | 5,713 | 4,758 | 758 | 5,516 |

SUMMER SESSIONS 1968

| | Men | Women | Total |
|-------------------|-------|-------|-------|
| Degree Candidates | | | |
| Undergraduate | 179 | 24 | 203 |
| Graduate | 834 | 25 | 859 |
| Total | 1,013 | 49 | 1,062 |
| Nondegree Status | 1,271 | 294 | 1,565 |
| Total | 2,284 | 343 | 2,627 |

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

UNITED STATES, TERRITORIES, AND POSSESSIONS

| FALL | | | SPRING | | |
|----------------------|-------|-------|----------------|-------|-------|
| | | | | | |
| Alabama | 25 | 22 | Maine | 34 | 30 |
| Alaska | 4 | 2 | Maryland | 2,491 | 2,335 |
| Arizona | 25 | 27 | Massachusetts | 370 | 357 |
| Arkansas | 12 | 13 | Michigan | 116 | 108 |
| California | 208 | 179 | Minnesota | 30 | 31 |
| Colorado | 38 | 39 | Mississippi | 13 | 11 |
| Connecticut | 359 | 330 | Missouri | 65 | 70 |
| Delaware | 56 | 56 | Montana | 19 | 15 |
| District of Columbia | 2,064 | 1,917 | Nebraska | 24 | 20 |
| Florida | 134 | 136 | Nevada | 11 | 11 |
| Georgia | 62 | 59 | New Hampshire | 29 | 30 |
| Hawaii | 20 | 18 | New Jersey | 878 | 850 |
| Idaho | 27 | 27 | New Mexico | 13 | 12 |
| Illinois | 189 | 174 | New York | 1,541 | 1,460 |
| Indiana | 71 | 67 | North Carolina | 57 | 60 |
| Iowa | 28 | 28 | North Dakota | 5 | 6 |
| Kansas | 41 | 39 | Ohio | 227 | 209 |
| Kentucky | 40 | 30 | Oklahoma | 22 | 20 |
| Louisiana | 26 | 25 | Oregon | 20 | 17 |

| | FALL | SPRING | | FALL | SPRING |
|--------------------------|-------|--------|-----------------------------|------|--------|
| Pennsylvania | 703 | 654 | Washington | 61 | 59 |
| Rhode Island | 61 | 57 | West Virginia | 44 | 39 |
| South Carolina | 29 | 31 | Wisconsin | 42 | 41 |
| South Dakota | 11 | 11 | Wyoming | 5 | 1 |
| Tennessee | 39 | 36 | Guam | 1 | 1 |
| Texas | 103 | 109 | Panama Canal Zone | 3 | 3 |
| Utah | 45 | 43 | Puerto Rico | 16 | 16 |
| Vermont | 23 | 19 | Virgin Islands | 5 | 5 |
| Virginia | 2,711 | 2,589 | | | |

FOREIGN COUNTRIES

| | FALL | SPRING | | FALL | SPRING |
|-------------------------------|------|--------|------------------------------------|------|--------|
| Argentina | 5 | 5 | Iran | 16 | 17 |
| Australia | 2 | 1 | Iraq | 3 | 3 |
| Austria | — | 1 | Ireland | 2 | 2 |
| Belgium | 2 | 2 | Israel | 7 | 6 |
| Biafra | — | 1 | Italy | 5 | 2 |
| Bolivia | 6 | 8 | Jamaica | 3 | 4 |
| Brazil | 14 | 15 | Japan | 12 | 12 |
| British Guiana | 1 | 1 | Jordan | 5 | 6 |
| British West Indies | 1 | 1 | Kenya | 4 | 3 |
| Bulgaria | 2 | 1 | Korea | 24 | 26 |
| Burma | 2 | 2 | Kuwait | 2 | 1 |
| Canada | 17 | 17 | Latvia | — | 1 |
| Ceylon | 1 | 1 | Lebanon | 5 | 5 |
| Chile | 6 | 2 | Liberia | 2 | 4 |
| China | 16 | 19 | Libya | 2 | 2 |
| Colombia | 12 | 12 | Malaysia | 4 | 4 |
| Congo, Republic of | 1 | 1 | Mexico | 7 | 5 |
| Costa Rica | 1 | 1 | Netherlands | 5 | 6 |
| Cuba | 18 | 17 | Nicaragua | 1 | 1 |
| Cyprus | 1 | 1 | Nigeria | 5 | 3 |
| Denmark | 2 | 2 | Norway | 1 | 1 |
| Dominican Republic | 1 | 1 | Pacific Islands | 1 | — |
| Ecuador | 1 | 3 | Pakistan | 7 | 8 |
| Egypt | 2 | 2 | Panama | 5 | 8 |
| El Salvador | 2 | 2 | Paraguay | — | 2 |
| England | 18 | 17 | Peru | 6 | 7 |
| Ethiopia | 2 | — | Philippines, Republic of | 23 | 24 |
| Finland | — | 1 | Saudi Arabia | 5 | 5 |
| France | 24 | 21 | Scotland | 1 | — |
| Gambia | — | 1 | Sierra Leone | 3 | 3 |
| Germany | 17 | 17 | South Africa | 2 | — |
| Ghana | 3 | 2 | Spain | 1 | 1 |
| Greece | 9 | 8 | Sweden | — | 1 |
| Guatemala | 3 | 3 | Switzerland | 1 | 4 |
| Haiti | 7 | 5 | Syria | 4 | 4 |
| Honduras | 1 | 1 | Taiwan | 4 | 2 |
| Hong Kong | 5 | 5 | Tanzania | 2 | 9 |
| Hungary | 1 | 1 | Thailand | 8 | 1 |
| Iceland | 1 | — | Togo | — | 3 |
| India | 73 | 56 | Trinidad | 2 | 1 |
| Indonesia | 5 | 6 | Tunisia | — | — |

| FALL | | SPRING | | FALL | | SPRING | |
|----------------------|----|--------|--|------------------------|---|--------|--|
| Turkey | 10 | 12 | | Vietnam | 2 | 7 | |
| United Arab Republic | 6 | 4 | | West Indies Federation | 2 | 2 | |
| Uruguay | 9 | 6 | | Yugoslavia | 2 | 4 | |
| Venezuela | 8 | 6 | | Stateless | 3 | 4 | |

Summary of Degrees Conferred 1968-69

| | SUMMER | FEB. | JUNE | TOTAL |
|---|--------|------|------|-------|
| Advanced Professional Certificate | - | 1 | - | 1 |
| Associate in Arts | 1 | 2 | 7 | 10 |
| Bachelor of Arts (Columbian College of Arts and Sciences) | 100 | 104 | 639 | 843 |
| Bachelor of Arts (School of Public and International Affairs) | 18 | 9 | 94 | 121 |
| Bachelor of Arts in Education | 16 | 13 | 84 | 113 |
| Bachelor of Business Administration | 14 | 28 | 65 | 107 |
| Bachelor of Science (Columbian College of Arts and Sciences) | 9 | 3 | 42 | 54 |
| Bachelor of Science (Civil Engineering) | 1 | 2 | 2 | 5 |
| Bachelor of Science (Electrical Engineering) | 2 | 5 | 17 | 24 |
| Bachelor of Science (Mechanical Engineering) | - | 5 | 7 | 12 |
| Bachelor of Science in General Studies (Columbian College of Arts and Sciences) | 2 | 6 | 4 | 12 |
| Bachelor of Science in General Studies (School of Government and Business Administration) | 17 | 19 | 30 | 66 |
| Bachelor of Science in Geodetic and Cartographic Science | - | 1 | 2 | 3 |
| Bachelor of Science in Medical Technology | 3 | - | - | 3 |
| Bachelor of Science in Oceanography | - | - | 1 | 1 |
| Bachelor of Science in Physical Education | 2 | 2 | 6 | 10 |
| Doctor of Business Administration | 4 | 9 | 8 | 21 |
| Doctor of Education | 6 | 8 | 14 | 28 |
| Doctor of Juridical Science | - | - | 1 | 1 |
| Doctor of Medicine | - | - | 94 | 94 |
| Doctor of Philosophy | - | 29 | 18 | 47 |
| Doctor of Public Administration | - | - | 2 | 2 |
| Doctor of Science | 1 | 5 | 5 | 11 |
| Education Specialist | 8 | 1 | 6 | 15 |
| Juris Doctor | 40 | 40 | 228 | 308 |
| Master of Arts (Graduate School of Arts and Sciences) | 40 | 34 | 50 | 124 |
| Master of Arts (School of Public and International Affairs) | 16 | 13 | 17 | 46 |
| Master of Arts in Education | 114 | 61 | 133 | 308 |
| Master of Arts in Government | 6 | - | 6 | 12 |
| Master of Arts in Teaching | - | - | 29 | 29 |
| Master of Business Administration | 30 | 34 | 119 | 183 |
| Master of Comparative Law | 3 | 2 | 2 | 7 |
| Master of Comparative Law (American Practice) | 2 | - | - | 2 |
| Master of Engineering Administration | 3 | 33 | 28 | 64 |
| Master of Fine Arts | 10 | 5 | 5 | 20 |

| | SUMMER | FEB. | JUNE | TOTAL |
|---|--------|------|-------|-------|
| Master of Laws | 19 | 18 | 25 | 62 |
| Master of Philosophy | — | — | 37 | 37 |
| Master of Public Administration | — | — | 2 | 2 |
| Master of Science (Graduate School of Arts and Sciences) | 11 | 9 | 15 | 35 |
| Master of Science (School of Engineering and Applied Science) | 11 | 21 | 32 | 64 |
| Master of Science in Administration | 1 | 10 | 23 | 34 |
| Master of Science in Business Administration | 124 | 21 | 4 | 149 |
| Master of Science in Engineering | — | 2 | 1 | 3 |
| Master of Science in Financial Management | 4 | 11 | 26 | 41 |
| Master of Science in Governmental Administration | 2 | 13 | 16 | 31 |
| Master of Science in International Affairs | 198 | 19 | 18 | 235 |
| Master of Science in Personnel Administration | 19 | 41 | 60 | 120 |
| Master of Science in Public Administration | 28 | 1 | 3 | 32 |
| Total | 885 | 640 | 2,027 | 3,552 |

Teaching Staff 1968-69

| | |
|--|-------|
| Professors Emeriti | 65 |
| Professors | 226 |
| Research Professors | 14 |
| Adjunct Professors | 15 |
| Visiting Professors | 19 |
| Ambassador in Residence | 1 |
| Professorial Lecturers | 114 |
| Clinical Professors | 58 |
| Associate Professors | 186 |
| Associate Research Professors | 18 |
| Adjunct Associate Professor | 1 |
| Visiting Associate Professors | 3 |
| Associate Professorial Lecturers | 80 |
| Associate Clinical Professors | 129 |
| Assistant Professors | 191 |
| Assistant Research Professors | 14 |
| Adjunct Assistant Professors | 3 |
| Visiting Assistant Professors | 2 |
| Assistant Professorial Lecturers | 103 |
| Assistant Clinical Professors | 299 |
| Instructors | 77 |
| Research Instructors | 2 |
| Clinical Instructors | 235 |
| Lecturers | 86 |
| Adjunct Lecturers | 11 |
| Special Lecturers | 21 |
| Studio Lecturers | 20 |
| Clerk of the Trial Practice Court | 1 |
| Assistants in the School of Medicine | 162 |
| Fellows in the School of Medicine | 61 |
| Fellows (nonmedical) | 14 |
| University Teaching Fellows | 59 |
| Graduate Teaching Assistants | 94 |
| Total | 2,384 |

UNIVERSITY RECORD INDEX

A

- | | |
|--|--|
| Alumni Achievement Awards, 121 Alumni and Allied Associations, 121-28 Alumni Service Awards, 121 | Assistantships, 111-14 Awards, recipients of, 111-20, 121 |
|--|--|

C

- Columbian Women, 127

D

- | | |
|--|--|
| Degrees conferred, 3-110, 133-34 Annual Commencement, June 8, 1969, 53-109 Columbian College of Arts and Sciences, 3-5, 30-32, 53-67 Education, School of, 11-16, 42-46, 86-95 Engineering and Applied Science, School of, 10-11, 40-42, 83-86 Government and Business Administration, School of, 17-24, 46-52, 96-106 Graduate School of Arts and Sciences, 6-8, 33-37, 68-74 | Degrees conferred (cont'd) Honorary, 110 Medicine, School of, 74-76 National Law Center, 8-10, 38-39, 76-83 Public and International Affairs, School of, 24-30, 52-53, 106-9 September 30, 1968, 3-30 Summary of, 133-34 Winter Convocation, February 22, 1969, 30-53 |
|--|--|

E

- | | |
|--------------------------------------|----------------------------------|
| Education Alumni Association, 125-26 | Engineer Alumni Association, 125 |
|--------------------------------------|----------------------------------|

F

- | | |
|-------------------------------|---------------------|
| Faculty, number and rank, 134 | Fellowships, 111-14 |
|-------------------------------|---------------------|

G

- | | |
|---|---|
| General Alumni Association, 121-27 Governing Board, 122-23 | Geographical Distribution of Students, 131-33 Grants-in-Aid, 118 |
|---|---|

H

- Honorary degrees conferred, 110

I

- Internships, 111-14

L

- | | |
|--|---|
| Law Association, 123-25 Lettermen Club, 127 | Library Science Alumni Association, 126 |
|--|---|

M

Medical Alumni Association, 123

N

Nurses Association, 126

P

Prizes, 118-20

R

Regional Alumni Clubs, 127

Registration, summary of, 129-33

S

Scholarships, 114-18

Summary of Degrees conferred, 133-34

Statistical Record, 129-34

T

Teaching Staff, 134

Traineeships, 105-8

WWomen's Board of the University
Hospital, 128Women's Physical Education Alumnae
Association, 126

